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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

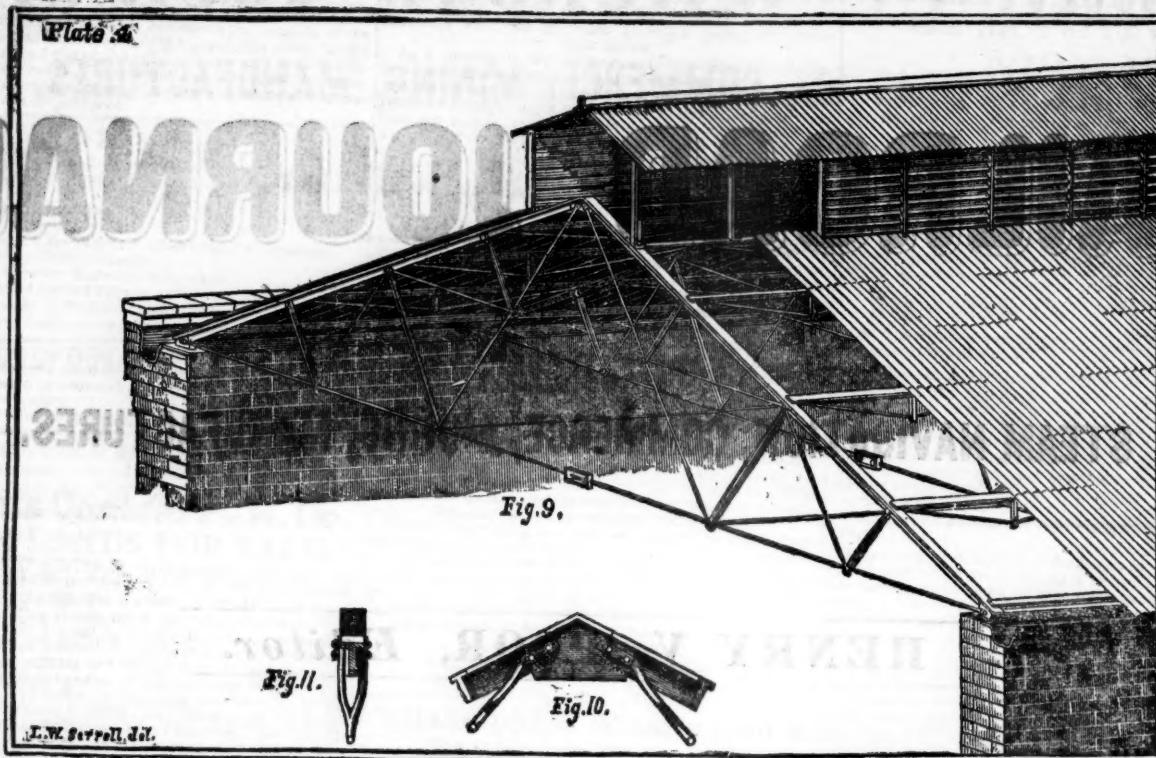
SATURDAY, AUGUST 16, 1856.

Second Quarto Series, Vol. XII., No. 33.—Whole No. 1,061, Vol. XXIX.

ESTABLISHED IN 1831.

NEW-YORK:
PUBLISHED WEEKLY, BY
JOHN H. SCHULTZ & CO.
Front Room, Third Floor,
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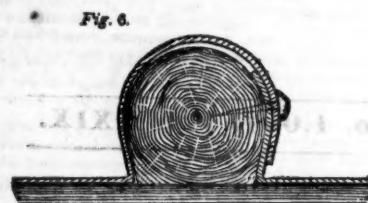
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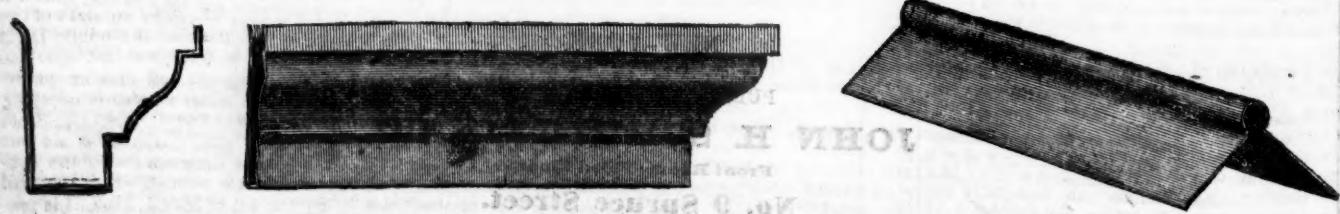


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MARSHALL LEFFERTS & BROTHER,
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SECOND QUARTO SERIES, VOL. XII., No. 33.]

SATURDAY, AUGUST 16, 1856.

[WHOLE No. 1,061, VOL. XXIX.

MESSRS. ALGAR & STREET, No. 11 Clements Lane, Lombard Street, LONDON, are the authorised European Agents for the *Journal*.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., NO. 9 SPRUCE ST.

New York, Saturday, August 16, 1856.

Pacific Railroad.

Below we give the report of the Special Committee of the House of Representatives on the subject of the Pacific railroad—having already given the minority report of Mr. Wood.

The Select Committee to whom was referred the bill to provide for the establishment of a railroad and telegraph communication between the Atlantic States and the Pacific Ocean, and for other purposes, beg leave to make the following report:

The necessity which exists for constructing lines of railroad and telegraph communication between the Atlantic and Pacific coasts, is no longer a question for argument. It is conceded by every one, that in order to maintain our present position on the Pacific, we must have some more speedy and direct means of intercourse than is at present afforded by the route through the possessions of a foreign power.

The importance of our Pacific possessions is felt in every pursuit and in every relation of life. The gold of California has furnished the merchant and trader with a capital by which enterprizes have been undertaken and accomplished which were before deemed impracticable. Our commercial marine has been nearly doubled since 1848; internal improvements have been pushed forward with astonishing rapidity; the value of every kind of property has been doubled, and the evid-

ence of prosperity and thrift are everywhere to be seen. The security and protection of that country from whence have been emanated nearly all these satisfactory results, is of the greatest importance; and that can be accomplished only by direct and easy communication through our own territories. Railroads will effect this. At present we are forced to resort to a very circuitous route by sea, through the tropics and across the continent at a most sickly point in the torrid zone. Should a war break out between our country and any other maritime power, or should a difficulty arise with one of the petty Spanish American States through which these routes lie, our communications would be interrupted and the unity of our confederacy actually broken up.

Looking to these facts alone to secure the construction of these lines of communication, has given them such an importance as never attached to any work of internal improvement since the time when, during President Jefferson's administration it was thought necessary to connect the States lying on the Atlantic seaboard with the States lying in the valley of the Mississippi by means of roads across the Alleghany mountains. Insignificant as the undertaking of the building of a wagon road across the Alleghanies may appear now, the proposition was then deemed exceedingly difficult, and occupied quite as much of the public attention as the Pacific railroad does at the present time. The States were then separated only by the mountain range of the Alleghanies, but the western country was so remote, and access to it so difficult, that the construction of a road was considered absolutely necessary, and sufficient to authorize the earnest attention of Congress. The people of the western frontier were at that time exposed to frequent incursions of the Indians. The country was exceedingly fertile, but the markets were so distant that the production was rather an incumbrance than a profit to the farmer, and vast tracts of rich agricultural land were suffered to remain an unbroken waste. The action of the Government attracted public attention and awakened private enterprise. Canals were projected, and then followed railroads, until every part of that country which was but a few years ago called the "Far West" has been brought within three or four days' communication with the cities on the seaboard, giving a new impulse to commerce, increasing the value of property, and relieving the frontier from all the dangers of a hostile foe. No better example can be given of the benefits resulting from the construction of railroads to both public and private property, than that of the Illinois Central railroad. On the line of that road the public lands had been offered for sale for many years without finding a purchaser, and were at last reduced to the lowest minimum price, 12½ cents per acre. Even this

reduction was not sufficient to induce their sale; but when the Government had given away one-half to assist in building the road, the other half was very readily sold for \$2.50 per acre. Similar results have followed the building of nearly every railroad in the country, although in many instances, as in this, the roads came in direct competition with river and canal transportation.

A railroad across the continent would open up a vast extent of country to settlement, and much of what is now believed to be sterile and barren will, no doubt, (as in California,) be found to yield bountifully to the agriculturist.

These lands are now totally without virtue, no matter how fertile they may be, and to the Government worthless. By giving away one-half for the construction of the proposed roads, the Government will thereby attach a value to the remainder, and whatever that value may be will be the amount the Government is gainer by the transaction. Your committee have not thought proper to step aside from the long established system of the Government, in granting lands to aid in the construction of the railroads under consideration, except incidentally in the payment for transportation of troops, munitions of war, &c., and for carrying the mails; at the same time, they have endeavored to extend to every portion of the country an equal share of the benefits to be derived from it. Every part of the country, extending from Lake Superior to the Gulf of Mexico, is brought in direct contact with one or the other of the proposed roads, and from the western frontiers of the States lying west of the Mississippi, connections are easily made with roads already completed to the cities on the Atlantic seaboard.

By thus combining all the great interests of the country, an effort has been made to allay sectional jealousies and to bind together more firmly every part of the country.

The policy of granting lands, or the proceeds of the sales thereof, for the purposes of internal improvement, and to increase the value of public property, was early adopted by our Government. By the act of April 30, 1802, one-twentieth of the net proceeds from the sales of the public lands lying within the State of Ohio, was set apart to "be applied to the laying out and making public roads leading from the navigable waters emptying into the Atlantic to the Ohio, to the said State and through the same," such roads to be laid out under the authority of Congress "with the consent of the several States through which the road shall pass." By the act of May 1, 1802, it is provided that it shall and may be lawful for the Secretary of the Treasury to cause to be viewed, marked and opened, such roads within the territory northwest of Ohio, as in his opinion may best serve to promote the sales of the public lands in future. Both these acts were approved by Mr.

Jefferson, and form the basis on which all similar acts have been predicated. Every Executive since that time have approved of similar acts, and the only change made was in the manner of making the grant, the lands having been given instead of the net proceeds of the sales thereof. The plan thus proposed precludes the necessity of entering into an estimate of the expenses to be incurred in constructing any of the proposed roads. Nor does it matter how many of the roads are thus authorized to be constructed. If built, they will open up a vast extent of country to settlement, and thus the Government and the people will be mutually benefitted. If the roads should not be built within the time specified, the lands revert to the Government, and the parties take nothing by the grant. Nothing is given without a corresponding benefit to accrue. As a means of military defense, the Secretary of War, in his last annual report, has placed this measure in such a strong point that your committee have thought proper to make the following extract.

Alluding to our Pacific possessions, he says:

This Territory is not more remote from the principal European States, than from those parts of our own country whence it would derive its military supplies, and some of those States have colonies and possessions on the Pacific, which would greatly facilitate their operations against it. With these advantages, and those which the attacking force always has of choice of time and place, an enemy possessing a considerable military marine could, with comparatively little cost to himself, subject us to enormous expenses, in giving to our Pacific frontier that protection which it is the duty of the General Government to afford.

In the first years of a war with any great maritime power, the communication by sea could not be relied upon for the transportation of supplies from the Atlantic to the Pacific States. Our naval peace establishment would not furnish adequate convoys for the number of storeships which it would be necessary to employ; and storeships alone, laden with supplies, could not undertake a voyage of twenty thousand miles, passing numerous neutral ports, where an enemy's armed vessels, even of the smallest size, might lie in wait to intercept them.

The only line of communication, then, would be overland; and by this it would be impracticable, with any means heretofore used, to furnish the amount of supplies required for the defense of the Pacific frontier. At the present prices over the best part of this route, the expense of land transportation alone, for the annual supplies of provisions, clothing, camp equipage and ammunition for such an army as it would be necessary to maintain there, would exceed \$20,000,000; and to maintain troops and carry on defensive operations under those circumstances, the expense per man would be six times greater than it is now; the land transportation of each field twelve pounder, with a due supply of ammunition for one year, would cost \$8,500; of each twenty-four pounder and ammunition \$9,000, and of a sea-coast gun and ammunition \$12,000. The transportation of ammunition for a year for 1,000 sea coast guns would cost \$10,000,000. But the expense of transportation would be vastly increased by a war; and at the rates that were paid on the northern frontier during the last war with Great Britain, the above estimates would be trebled. The time required for the overland journey would be from four to six months. In point of fact, however, supplies for such an army could not be transported across the continent. On the arid and barren belts to be crossed, the limited quantities of water and grass would soon be exhausted by the numerous draught animals required for heavy trains, and over such distances forage could not be carried for their subsistence.

On the other hand, the enemy would send out his supplies at from one-seventh to one-twentieth the above rates, and in less time—perhaps one-fourth the time—if he should obtain command of the Isthmus routes.

Any reliance, therefore, upon furnishing that

part of our frontier with means of defense from the Atlantic and interior States, after the commencement of hostilities, would be vain, and the next resource would be to accumulate there such amount of stores and supplies as would suffice during the continuance of the contest, or until we could obtain command of the sea. Assigning but a moderate limit to this period, the expense would yet be enormous. The fortifications, depots and storehouses would necessarily be on the largest scale, and the cost of placing supplies there for 5 years would amount to nearly 5 millions of dollars.

In many respects, the cost during peace would be equivalent to that during war. The perishable character of many articles would render it, perhaps, impracticable to put provisions in depots for such a length of time; and in any case there would be deterioration amounting to some millions of dollars per year.

These considerations, and others of a strictly military character, cause the Department to examine with interest all projects promising the accomplishment of a railroad communication between the navigable waters of the Mississippi and those of the Pacific Ocean. As military operations depend in greater degree upon rapidity and certainty of movement than upon any other circumstances, the introduction of railway transportation has greatly improved the means of defending our Atlantic and inland frontier; and to give us a sense of security from attack upon the most exposed portion of our territory, it is requisite that the facility of railroad transportation should be extended to the Pacific coast. Were such a road completed, our Pacific coast, instead of being further removed in time, and less accessible to us than to any enemy, would be brought within a few days of easy communication, and the cost of supplying an army there, instead of being many times greater to us than to him, would be about equal. We would be relieved of the necessity of accumulating large supplies on that coast, to waste, perhaps, through long years of peace; and we could feel entire confidence that, let war come when and with whom it may, before a hostile expedition could reach that exposed frontier, an ample force could be placed there to repel any attempt at invasion.

From the results of the surveys authorized by Congress, we derive at least the assurance that the work is practicable; and may dismiss the apprehensions which, previously, we could not but entertain as to the possibility of defending our Pacific territory through a long war with a powerful maritime enemy.

The judgment which may be formed as to the prospect of its completion must control our future plans for the military defense of that frontier, and any plan for the purpose which should leave that consideration out of view, would be as imperfect as if it should disregard all those other resources with which commerce and art aid the operations of armies.

Whether we shall depend on private capital and enterprise alone for the early establishment of railroad communication, or shall promote its construction by such aid as the General Government can constitutionally give; whether we shall rely on the continuance of peace until the increase of the population and resources of the Pacific States shall render them independent of aid from those of the Atlantic slope and Mississippi valley, or whether we shall adopt the extensive system of defense above referred to, are questions of public policy which belong to Congress to decide.

Beyond the direct employment of such a road for military purposes, it has other relations to all the great interests of our confederacy, political, commercial and social, the prosperity of which essentially contributes to the common defense. Of these it is not my purpose to treat, further than to point to the additional resources which it would develop, and the increase of population which must attend upon giving such facility of communication to a country so tempting to enterprise, much of which having most valuable products, is beyond the reach of market.

Some of the considerations which bear upon the questions submitted to the committee have been briefly suggested, but we do not deem it necessary to enter upon an extended argument to show either the constitutional power of Congress to aid the construction of the proposed roads, or its duty to exercise power.

The public mind has already formed its judgment on both these points. The public press, popular assemblies and legislative resolutions have spoken with a concurring voice; and recent representative conventions of the democratic party at Cincinnati, and the republican party at Philadelphia, have, with most remarkable unanimity and emphasis, declared the will of the people on this subject, in resolutions intended for our instruction.

The committee have deemed it their duty to give effect to this general wish, and have examined with much care the various plans which have from time to time been proposed. They have thought proper to change the provisions of the bill referred to them very materially preferring to make the grant directly to those companies whose interests and well established ability give assurance that they will press the work forward to completion at the earliest day possible.

Public Works of Tennessee.

Below we give the Report of the Railroad Commissioner for the State of Tennessee, in which the railroads, and the railroad system of that State, are fully described.

We have previously published a portion of the report but its importance now leads us to give it entire.

NASHVILLE, TENN., Jan'y 28, 1856.

To ANDREW JOHNSON, Governor of Tennessee.

Sir:—In compliance with your request, I herewith submit my report of the condition, progress, and probable future prospects of the railroads in this State, entitled to State aid, under the provisions of the General Internal Improvement Law, passed 11th February, 1852, and the amendments thereto, showing the number of roads that have applied for State bonds—the amount of bonds issued—the amount of bonds yet to be issued—together with the capital stock subscribed to each of said roads, and the estimated cost of road way in the State, as well as the amount of finished road upon these lines, and also the amount within the limits of the State.

I have also made an estimate of all the roads in the State (except the Memphis, Clarksville and Louisville, and Junction roads, whose ultimate purposes I could not learn,) that have taken steps to secure the benefits of the Internal Improvement Law, so as to show an approximate of the ultimate liability of the State, should they all be completed.

Of the basis of this liability, or the State's lien for the loan of her credit, I need not speak, as the law itself shows the conditions upon which the bonds are to be issued.

It has been my object at all times, to see that the law was faithfully and substantially complied with, before recommending the issuance of bonds, and I am free to say, I have found all the companies applying for bonds striving to, and in most instances had, substantially complied with the letter and spirit of the law, before I was called on to examine their respective roads.

I have in every instance found the officers of the various companies disposed to open their books to my inspection, and to give me all the aid in their power, to facilitate my examinations as to their financial conditions. The character of the work on the various roads I have examined, I think, is such as was contemplated by the law; and the roads and their equipments will compare favorably with any others in the Union.

The following table will exhibit such facts as I have been able to get, in relation to the subject matter of the Report.

WEST TENNESSEE.										
	Whole Length of Road, including Branches.	Length of Road in Tennessee.	Estimated Cost of Road-way in Tennessee.	Available Assets applicable to Road-way in Tenn.	Whole Length of Finished Road.	Length of Finished Road in Tenn., incl. Branches.	Maximum Grade of Road, in feet, per mile.	Whole Amt. of State Aid granted by Tennessee.	Amount of State Aid actually received.	
† Memphis and Charleston— Memphis to Stevenson ... 287	87	\$906,000	\$1,117,900	216	88	47	\$870,000	\$700,000		
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	60,000	
† Mississippi and Tennessee— Memphis to Grenada ... 96	9.8	75,000	768,000	15	9.8	..	98,000	98,000		
† Memphis & Ohio—Memphis to Paris ... 180	180	910,000	921,000	40	40	40	1,800,000	400,000		
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	60,000	
† Mobile and Ohio—Mobile to Cairo ... 527	118.5	763,832	841,200	160	..	..	1,185,000	.....	
† Mississippi Central and Tennessee—Canton, Miss., to Jackson, Tenn.	48	.....	.....	..	..	..	480,000	.....	
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	.....	
† North-west road, West Tenn.—Nashville to Hickman ... 171	77	To Union City	..	68	770,000	.....			
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	.....	
	470.8			481	187.8		\$5,108,000	\$1,818,000		
MIDDLE TENNESSEE.										
* Nashville and Chattanooga—Nashville to Chattanooga, (In operation) ... 151	151	.....	.....	151	151	106	\$1,500,000	\$1,500,000	
† Tennessee and Alabama—Nashville to Hamburg ... 135	135	\$983,000	\$956,000	27	27	49	1,850,000	300,000		
† McMinnville and Manchester—Manch'ster to Tullahoma, (All graded) ... 34.5	34.5	188,318	161,000	..	..	..	345,000	300,000	
† Central Southern—Columbia to Decatur ...	48.5	.....	.....	..	..	..	485,000	.....	
† Louisville and Nashville—Nashville to Louisville ... 184	45.5	.....	.....	..	..	..	455,000	.....	
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	.....	
† Edgetield and Kentucky—Nashville to Henderson ... 144	48	.....	.....	..	..	..	480,000	.....	
† South-western—McMinnville to Danville ...	85	.....	.....	..	..	..	850,000	.....	
† Winchester and Alabama—Dechard's to Guntersville ... 67	23	.....	.....	..	..	..	230,000	.....	
† Nashville and North-western—in Middle Tennessee ... 171	81	.....	.....	..	..	..	810,000	.....	
	651.5			178	178		\$6,805,000	\$2,100,000		
EAST TENNESSEE.										
* East Tenn. & Ga.—Knoxville to Dalton (includ. a fraction in Georgia) ... 110	110	.....	.....	110	110	37	\$770,000	\$770,000	
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	100,000	
† East Tennessee and Virginia—Knoxville to Bristol ... 180	180	\$835,853	\$356,215	26	26	68	1,300,000	469,000		
Bridge aid granted ...	...	.....	.....	..	..	..	300,000	300,000	
† Knoxville to Charleston—Knoxville to State Line ... 55	55	.....	.....	..	..	..	550,000	.....	
Bridge aid granted ...	...	.....	.....	..	..	..	300,000	.....	
† Knoxville and Kentucky—Knoxville to Danville ... 60	60	.....	.....	..	..	..	600,000	.....	
Bridge aid granted ...	...	.....	.....	..	..	..	100,000	.....	
† Western and Charleston—Athens to Blue Ridge road ... 30	30	.....	.....	..	..	..	300,000	.....	
† Cleveland and Chattanooga—Cleveland to Chattanooga ... 30	30	.....	.....	..	..	..	300,000	.....	
† Cincinnati, Cumberland Gap & Charleston—Paint Rock and Cumberland Gap ... 94	94	.....	.....	..	..	..	940,000	.....	
Bridge aid granted ...	...	.....	.....	..	..	..	200,000	.....	
	509			136	136		\$5,760,000	\$1,639,000		
RECAPITULATION.										
Miles of Road in Tenn. Miles Finished. State Aid Granted. State Aid Rec'd.										
West Tennessee ... 403	187.8		\$5,108,000				\$1,818,000			
Middle Tennessee ... 651.5	178		6,605,000				2,100,000			
East Tennessee ... 509	136		5,760,000				1,639,000			
	1,680.8	451.5	\$17,468,000				\$5,067,000			

NOTE A.—Roads marked thus (*) are finished. Roads marked thus (†) are in an active state of construction, and progressing rapidly to completion. Roads marked thus (‡) have portions of their lines under contract, and some work going on. Roads marked thus (§) have organized with a determination to go on to completion, but have not let their work to contract.

NOTE B.—In the estimate of finished roads, the Nashville and Chattanooga lateral to Shelbyville, of eight miles, was inadvertently omitted. This error corrected, will make the finished roads in Tennessee, 459.8 miles—the whole length of the Nashville and Chattanooga road and branch, being 159 miles. The State aid per mile granted to, and received by this road, is \$9,433.

In addition to the roads marked as finished and in operation, many of the companies, particularly those marked with a (†), have large portions of their lines graded, and will lay the track upon them during the present year. But I have no means of ascertaining the exact amount of graded road on each, as I have made a personal examination only of those lines making application for State Bonds.

Part of the Nashville and Chattanooga road, in Alabama, is placed as being in Tennessee.

I have placed in the above estimate such roads as have taken some steps to avail themselves of State aid, (with the two exceptions referred to,) so far as I have been able to ascertain, and left out those that have taken none, as the time has now nearly elapsed, under the general law, for them to have completed the first thirty miles of their respective roads. I have doubtless placed several roads in the list, expected to receive State aid, that may not comply with the law, or that will be materially shortened by making other connections than those originally contemplated, consequently reducing the State aid that much; while it may be possible that I have omitted some roads that may yet organize, and go to work and secure the State aid. But the estimate made is large, and it is thought will fully cover any possible contingency, as I feel assured that more of the roads that are placed in the estimate will never comply with the law, than there will be of those that are left out of the estimate that will yet come in, and comply with it. The whole estimate is, however, approximate, and is based upon the best information I have been able to obtain; but is believed to be very near what the actual results will prove.

It will be seen that the aggregate length of roads, as given, is sixteen hundred and thirty and eight-tenths miles, which, it may be safely assumed, will require for their completion an expenditure of over \$25,000,000; the State will have incurred a liability in this outlay of \$17,468,000, taking as her security, a lien upon the whole investment.

I beg leave to remark, that our railroads, so far as they now operate, must do mostly a local business, until they shall have established their various connections. One road is dependant upon another, and neither can exhibit its capacity in developing resources, giving energy and increase to trade, or rendering compensating dividends to its owners, until it shall fall into and become a part of the systems of other States.

The Tennessee system is yet in its infancy, and its importance can only be appreciated by contemplating our lines of road in their ultimate and varied connections with other roads of the State. In this point of view, I beg leave to submit a few remarks, which I trust will not be considered out of place.

Commencing then, with the Mobile and Ohio road, (nearly graded through our State,) this is the second longest road in the Union, being only exceeded by the Illinois Central, with which it is intended to connect at Cairo. The two united, from the Northern and Southern line, passing through West Tennessee, and will bring into close contact the Northern and Southern extremes of the Mississippi valley. This road in its progress from Mobile, intersects in Mississippi the line of

roads from New Orleans; crosses the Memphis and Charleston road about ninety miles from Memphis; at Jackson, Tennessee, it intersects the Mississippi Central and Tennessee road, which is but an extension of the New Orleans road; crosses the line of the Memphis and Ohio road at or near Trenton, in Gibson county, and from its northern terminus to that point, will aid in establishing another important line of southern travel, by way of Memphis and Grenada to New Orleans. North of the Memphis and Ohio intersection, at Union City, in Obion county, the main line of this road crosses the Nashville and North-Western road, (now in rapid progress); from this point it also throws off its Paducah lateral—the main stem passing on to its northern terminus at the mouth of the Ohio river. Falling back to McNairy county Tennessee, this road, so remarkable for its geographical relations and adaptations to the other roads in our system, sends off another lateral of sixteen and a half miles, (now under contract,) and is designed to connect with the Tennessee and Alabama railroad, at Hamburg. Thus by a slight divergence, it falls into the main Northern and Southern trunk lines, passing through Middle Tennessee, and aiding to establish another through line from New Orleans and Mobile to Louisville, Kentucky, and to Henderson on the Ohio river, at which points these Northern roads are intended to complete the connections, and will fall into the network system of roads in the North-western States, placing Nashville in direct connection with the great railroad centres of that important region.

The Edgefield and Kentucky road, passing through the coal regions of Kentucky, will establish a direct connection between Nashville and Chicago, while from its northern terminus, towards the south, it falls into line with the roads now projected or in progress, leading from Nashville, via Decatur, Alabama, to the southern portions of Alabama.

The Louisville and Nashville road, now placed under the most favorable auspices, will give an important outlet from the South to the North-eastern cities, via Louisville, Cincinnati, and other great central points.

The Alabama Legislature lately granted "material aid, to a central line of roads, leading from the Tennessee valley to the waters of Mobile Bay, which insures their speedy construction. This fact gives additional importance to the proposed Central Southern road, which would aid in establishing a direct line from Nashville along these routes, through the centre of Alabama.

The movement just adverted to on the part of Alabama, will present also a strong argument in favor of the construction of the Winchester and Alabama, and the South-western railroads, which, if carried to the respective connections contemplated by the friends of these enterprises, will give a line of road leading from Cincinnati to South Alabama.

Passing, however, to the Eastern portion of our system of improvements, I remark that the Knoxville and Kentucky, and the Knoxville and Charleston roads, when completed, will establish an important communication between Cincinnati and Charleston, and thus open up a highway between the Ohio valley and the South-Atlantic seaboard. Cincinnati and Charleston, (the Queen Cities of their respective States,) upon the completion of these projects, will have been for the first time locked in a lasting embrace!—"a consummation most devoutly to be wished." The line of roads from Knoxville, designed to connect that place with Charleston, is made up of four companies, to wit: The Knoxville and Charleston railroad company in Tennessee; the Tennessee River railroad company, in North Carolina; the Blue Ridge railroad company in Georgia; and Blue Ridge railroad company in South Carolina. These four companies together have a capital of nearly \$5,000,000. The enterprise contemplates the construction of two hundred miles of road, from Knoxville to Anderson Courthouse, in South Carolina, which, if constructed, will place Knoxville one

hundred and twenty miles nearer to Charleston than by the present railway route. About fifty miles of the road in South Carolina was graded in September last, and about seven hundred hands were then engaged upon that part of the line.

A reference to the map will show the importance of the connection intended to be established by the proposed Western and Charleston railroad.

The Cincinnati, Cumberland Gap, and Charleston road is the Tennessee link in a line of roads from Cincinnati to Charleston, which is designed to enter the State on the North at Cumberland Gap, and passing out of it into North Carolina, by way of French Broad River, at Paint Rock. To complete this line of road, there is yet to be finished (besides the Tennessee part) one hundred and twenty-eight miles from Lexington, Kentucky, to Cumberland Gap, and, on the South, about one hundred miles from Paint Rock to Spartanburg, South Carolina. The Legislature of North Carolina has appropriated, as I believe, five millions of dollars to extend her Central road from Salisbury (the point at which it is completed) to Paint Rock. The North Carolina Central is intended to form a part of the trunk of said line of roads. The termini of the North Carolina Central are Paint Rock, on the French Broad, and Beaufort, on the Atlantic, with a lateral to Spartanburg.—This line of roads, if completed, will form nearly an air line through upper East Tennessee, from Cincinnati to Charleston. The only material divergence (of about thirty miles) is in approaching the Cumberland Mountain.

Returning to Memphis as a starting point, there is now rapidly forming another line of roads, destined to take an important position in our system of improvements. It may be properly called the North-Eastern and South-Western line. From Memphis, as a point of divergence, this line will be made up on the South-West of the roads projected and in progress, by the way of Little Rock and Fulton, in Arkansas, Shreveport, in Louisiana, and thence into the interior of Texas, there pointing to more western connections to be formed in that interesting State.

From Memphis, this line takes up its north-easterly course along the Memphis and Charleston, eastern end of the Nashville and Chattanooga, Chattanooga and Cleveland, East Tennessee and Georgia, East Tennessee and Virginia, Virginia and Tennessee, and Orange and Alexandria roads, to Alexandria in the District of Columbia; from which point it again takes up its air line course, by means of its more northern connections, to Boston, by way of Baltimore, Philadelphia and New York.

The completion of the New Orleans and Mobile lines of roads, will perfect the South-western connections in the direction of the two cities to which they respectfully lead. From Memphis to Alexandria, D. C., little is needed to perfect the line.—The Memphis and Charleston road will be finished early in 1857. The Orange and Alexandria is pressing its extension from Gordonsville to Lynchburg, a distance of about seventy-five miles. The Virginia and Tennessee road is now nearly finished. The shortened distance from Chattanooga, it is hoped, will be soon placed under contract, and the East Tennessee and Virginia company, struggling under a thousand difficulties, unfelt by their more favored neighbors, are steadily and certainly pushing their works to completion.—When these gaps shall have been filled up, East Tennessee will be relieved from her position of isolation, and, for the first time, will have a chance to develop her immense agricultural and mineral resources. This line of road is over three hundred miles nearer to Washington, from Memphis, and over one hundred and ten miles nearer from Atlanta, the railroad centre of Georgia, than by the way of Augusta and Wilmington. It escapes the frigid cold, and other vexatious incidents, of more Northern lines, on the one hand, and the sultry heat, uninteresting scenery, and sterile regions of the Southern line upon the other. In its course, it pierces the three great mountain ranges

of the South—presenting, every hour, magnificent

scenery, fertile valleys, and cultivated regions to the eye of the traveler. Nature itself has decreed this line of roads to be one of the great arteries of trade, commerce and travel.

The Nashville and Chattanooga road, while at its eastern end it aids in forming the line just referred to, falls directly into connection with the Nashville and North-western road, now in progress, which will, upon its completion, cross our Northern and Southern routes, and give us a South-eastern and North-western trunk, directly connecting, by the way of Nashville, the system of roads actively progressing in Missouri with those of Georgia and South Carolina, and leading to their important seaports.

The Nashville and North-western, and Mississippi Central, contemplate a connection at Huntingdon, which, when consummated, will open up another outlet to New Orleans. The Mississippi Central road, from the State line to Jackson, Tennessee, it is understood, will have its roadway completed by April. The gap between Jackson and Huntingdon is under forty miles.

Permit me to remark, that the system of Improvements, as designed by our Legislature, was marked with imperfections. Enterprises of inferior merit were, in some instances, dignified with the tender of State aid. This feature, almost inseparable from such a scheme, has, to a great extent, been corrected by the abandonment of such enterprises; and thus, the errors of legislation have been obviated by the foresight of our citizens. The general policy now being carried out is believed to be wise and prudent, and every wish of the heart is in favor of its consummation.

Should no new enterprises of doubtful utility be nursed into existence to mar the beauty of our system, and it continue to progress as it now does, Tennessee, by the liberality of her Legislature and the enterprise of her people, will soon have the satisfaction of seeing that she has contributed her full share towards weaving the great national web now spreading over the whole country; which, while it stimulates our commerce and develops our untold resources, will perform the more sacred office of holding the great sisterhood of States in a lasting and durable embrace.

A few suggestions, as to our Internal Improvement Laws, and I shall close.

No certain provisions for the adequate preparation of a sinking fund, for the redemption of the State Bonds, has yet been made. Instead of requiring companies to set apart a portion of their earnings for this purpose, five years from the completion of their road, as is now the case, it ought to commence within a certain specified period from the issuance of the Bonds.

Our Bonds are now placed in the hands of the officers of the different companies, to be negotiated by them. In many instances, they have no experience in the money markets of the United States and Europe. The effect cannot be otherwise than injurious to the interests of the State, as well as the companies. Several States have been forced to abandon this policy, and to appoint special agents, at the great centres of capital, to negotiate their Bonds. The plan has worked well; and I submit, that something of the sort should be done in Tennessee.

At present, we have no law regulating the grade of roads. It is comparatively easy to build a railroad that shall conform to the inequalities of the surface over which it passes; but, when constructed, its capacity for usefulness is, in a great measure, destroyed, and its ability to meet the demands upon it may be well questioned. A prudent and reasonable restriction in this matter, is believed to be important.

At present, there is no direct relation established between the Road Commissioner and the Legislative Department. I would suggest, that the immense interest which the State has embarked in her railroad enterprises would seem to require that this officer, in addition to his other duties, should, at each meeting of the Legislature, submit a full report of the condition, prospects and

working of the different railroads now receiving the aid of the State.

Respectfully submitted,
R. G. PAYNE, Road-Commissioner.

TABLE

Showing the distances from most of the principal commercial cities of the Union, and their connection with the Tennessee system of Internal Improvements.

Nashville to New York, via Louisville,	
Pittsburg and Philad.	1,091 miles.
" to New York, via Cincinnati,	
New York and Erie R.R.	1,146 "
" to New York, via Knoxville	
and Washington City	983 "
" to New York, via Augusta,	
Branchville & Wash'ton	
City	1,840 "
" to Charleston, S. C., via Au-	
gusta, Ga.	597 "
" to Charl'ton, via Rabun Gap	
R. R.	602 "
" to Richmond, Va., via Au-	
gusta, Ga.	991 "
" to Richmond, via Knoxville.	740 "
" to Savannah, via Atlanta &	
Macon	581 "
" to Chicago, via Henderson.	508 "
" to New Orleans, via Jackson,	
Tenn.	585 "
" to New Orleans, via Colum-	
bia and Hamburg, Tenn.	514 "
" to Memphis, via Browns-	
ville, Tenn.	225 "
Memphis to New Orleans, via Grenada	360 "
" to New York, via Knoxville	
and Washington City	1,150 "
" to New York, via Chattanooga and Augusta	1,504 "
" to Charleston, via Chattanooga and Augusta	758 "
" to Charleston, via Athens,	
Tenn., and Rabun Gap	
R. R.	763 "
" to Richmond, Va., via Knox-	
ville, Tenn.	904 "
" to Richmoud, via Augusta,	
Ga.	1,155 "
Mobile to Chicago, via Jackson, Tenn.	858 "
New Orleans to Chicago, via Jackson,	
Tenn.	885 "
" to Chicago, via Memphis.	887 "
" to Louisville, via Nashville.	700 "
" to New York, via Knoxville.	1,318 "
" to New York, via Atlanta &	
Augusta	1,632 "
Cincinnati to Charleston, via Knoxville	
and Aikin	663 "
" to Savannah, via Knoxville.	652 "
" to Charleston, via Cumber-	
land Gap and Paint Rock	
R. R.	650 "

NOTE.—The roads projected, or in progress, in Alabama, will place Knoxville in a direct line of travel between Mobile and Cincinnati.

Pittsburg and Steubenville Railroad.

In regard to the Pittsburg and Steubenville road the *Chronicle* says:

"The Steubenville road is at last emerging from the clouds and thick darkness that have so long obscured its prospects. The gentlemen who now hold the road under contract have arrived upon the ground, and we understand that the work will be commenced in a few days with a strong force of men. It is expected that the road, except the bridging, will be completed before the termination of the present year. The Board of Directors held a meeting on Wednesday, when Isaac Jones, Esq., according to previous arrangement, resigned the Presidency of the company, to take effect on the first of October. R. W. Latham, Esq., of New York, was unanimously chosen to fill the vacancy. Mr. Latham is a gentleman of tried financial ability, and has been largely instrumental in consummating the contract by which the road is to be

completed. We have the satisfaction of knowing that this important road is in a fair way to attain a condition of final prosperity."

Chicago and Burlington Railroad.

Earnings for 1856:

	May.	June.	July.
Freight....	\$86,580.83	\$109,966.59	\$129,458.34
Passengers.	54,684.14	53,096.29	45,210.71
Miscel's....	1,783.10	1,515.86	1,613.94
Total....	\$143,048.07	\$164,578.24	\$176,282.99
	May.	June.	July.
Freight....	\$81,197.84	\$109,125.44	\$90,006.22
Passengers.	44,164.06	43,863.13	36,198.18
Miscel's....	1,389.29	1,389.29	1,389.29
Total....	\$126,751.19	\$157,377.86	\$127,598.69

Railroad Car Springs.

If there is any one thing that annoys a traveler on a railroad, more than another, it is a bad spring. To be pitched and tossed about without mercy, without feeling, is a condition that is certainly anything but enviable. We can stand a rough road, but a combination of rough roads and bad springs is most unbearable. Feeling that this is too often the case, we have taken some pains to ascertain if there was not something, new or old, in this line, that could supplant those now in use. In our investigation we have found many kinds, and we trust we shall not be considered as intrusive if we should detail some of our observations.

Metal, it has been pretty generally ascertained, makes the best spring, and attention is generally directed towards springs of this class.

Of the kinds that we have seen, there are but two that deserve much attention; and of these two, but one, we think, will ever be found to answer the desired purpose. To be sure there are many that are apparently well adapted to the purpose—but when the test comes, the failure comes also. Much has been said with regard to a spring made in England, known as Bailie's Spring; but, although a very good one, it will answer for one purpose only—that is, carrying locomotives; the weight never varying more than two or three hundred pounds, of course any spring that can stand the pressure of the locomotive, without setting, will answer; but for passenger or freight cars, where the weight is varied continually, they have not been found to answer the purpose. They are too rigid when of sufficient power; besides, there is too much friction. It has been argued that friction improves a spring. This we have never been able to believe. The Gardiner's Conical Volute Spring is the only one which, to our fancy, overcomes the difficulties and objections that have been urged to those now in use and the Bailie Spring. Its construction is certainly the most simple, its appearance the most unique of any made; it is light, cheap, to all appearances the most durable, and withal most powerful of any we have seen. The motion, when under the car, is soft and delicate; there is no rude jar, no unequal, sudden motion; but it rides, as a spring should ride; and this spring has no friction. Mr. Gardiner in this has certainly, by the most simple means, accomplished a great object—outdistanced all competitors. Many have striven to attain this point, but failed; and when the failure came, said that friction was necessary. Believe us, it is injurious.

We have seen the most severe tests inflicted upon the Gardiner Spring, but in all cases it was triumphant. We understand that for the past eight months they have been in use on one of our City Railroad Cars, and at this present day are as good as at first. They were put under an iron car, where, in the same length of time, three sets of India rubber had been rendered useless. We look forward to this invention as one that will eventually supplant all other springs in use. A company has been formed, we believe, of wealthy gentlemen, who intend to manufacture them on an extensive scale. Mr. Charles Minot, late Super-

intendent of the New York and Erie Railroad is their President. The fact that this gentleman has consented to the use of his name in connection with an article of this kind, is a sufficient guarantee of the estimation in which it is held by railroad men. We have confidence in Mr. Minot's opinion.—*Am. Railway Guide.*

More Iron.

Over six hundred tons of iron, for the Tennessee and Mississippi railroad, was landed at our wharf yesterday. The freight bill amounted to the snug little sum of \$3,024.

Texas Statistics.

The report of the State Treasurer of Texas shows the number of acres of land, upon which taxes were assessed, to be 45,893,869, and the assessed value, \$58,671,126. The number of town lots assessed was 40,136, at a value of \$10,108,638. The number of negroes is stated at 105,803, value, \$58,873,924; number of horses, 171,814, at \$7,943,878; head of cattle, 1,433,792, at \$8,922,545. The total value of assessed property in the State was \$149,521,451. The whole tax raised upon this property was but \$225,270.40, which, added to the poll tax, makes the whole amount raised by taxation \$246,252.90.

Milwaukee and Watertown Railroad.

We learn that the work on the extension of this road is progressing rapidly, and that the grading is nearly completed to Lowell, ten miles from Watertown, the present terminus of the road.—The work of driving the piles across "Mud Lake," is being pushed at the rate of 100 to 150 feet per day, and that the contractors have arranged for another "driving machine," which will be put on the work immediately, and which will secure the completion of the work within thirty days. The iron is ready, and the track-laying is to be commenced on the first day of August. The officers of the road are pushing the work with great vigor and confidently expect to reach Lowell station by the first day of September next. From Lowell to Columbus, nine miles, there is a strong force on the line, to which the contractors are making large additions, the grading is so far advanced that, with the large force which will be concentrated on that portion of the work as soon as the east end is completed, will without doubt be sufficient to complete that portion of the grading as fast as the iron can be put down.

There is no bridging or piling west of Lowell, and the heaviest portion of the work is nearly done. On the 1st of November next the Directors confidentially expect to open the road to Columbus, a distance of 64 miles from Milwaukee, and on an air-line toward Portage City, and less than 27 miles from that point.

When this route is completed to Columbus, there can be no doubt it will be one of the best paying routes in the west. The county of Columbia is one of the richest farming counties in the State, perhaps in some respects the best, its rolling prairies on the south and west, with abundance of running waters, with the splendid opening on the north and east, with plenty of timber, and water power in abundance, render this portion of the State capable of furnishing an immense amount of business for this road.

Although the enterprise has encountered much opposition and many difficulties which have prevented its completion as early as its friends desired, it has been managed with integrity and in a manner which has in an eminent degree secured the confidence of the stockholders and capitalists who have most heartily embarked in the project, and although it would have been desirable to have completed the work at an earlier day, they have the fullest confidence in the directors, and have the satisfaction of knowing that its direction is composed of gentlemen of large means, of great energy, and who are bound to carry forward this useful work with prudence and economy, and who are determined to bring it to a successful consummation at an early day.—*Daily Wisconsin.*

Railway Share List.

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Length of Rail.	Capital paid in.	Debt.	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of share.	NAME OF COMPANY.	Length of Rail.	Capital paid in.	Debt.	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of share.	
Atlantic & St. Lawrence	149	1,532,100	2,973,700	6,019,929	470,647	110,247	6	55	Brunswick and Florida, Ga.	80	800,000	800,000	550,000	In progr.	141,168	8		
Androscog & Kennebec	56	588,042	1,622,906	2,210,947	209,475	none	14		South Western	92	1,097,496	465,500	1,624,920	253,306				
Kennebec & Portland	56	1,114,726	1,661,286	2,470,600	270,214	112,491	5	55	Tennessee and Alabama	30	246,486	-----	679,906	In progr.				
Portl. Seco, & Portland	51	1,367,000	119,237	1,486,827	270,214	112,491	5	55	Tennessee and Mississ.	170,931	-----	175,240	In progr.					
Boston, Coco, & Montreal	93	1,808,000	1,050,612	2,771,310	233,234	120,834	-----		Memphis and Charles'n	217	1,279,440	2,127,002	4,028,798	811,631	159,572			
Cheshire	52	2,085,926	899,313	3,170,687	380,221	143,665	2	17	Mobile and Ohio	158	2,568,555	1,802,921	4,536,412	199,932	109,236			
Concord	56	1,500,000	8,424	1,412,576	335,919	136,454	6	77	Miss. Central	188	642,524	-----	628,303	In progr.				
Northern, N. H.	82	2,768,400	none	3,016,638	370,520	138,299	2	41	N.O., Opelousas & G. W.	56	2,930,425	671,045	2,657,565	In progr.				
Connt & Passumps. Riv.	61	1,048,145	787,608	1,780,062	162,677	55,173	none	4	Vicksburg, Shrevep. & Tex.	111	750	-----	107,895	In progr.				
Kutland & Burlington	120	2,358,376	1,662,396	3,378,428	394,971	none	-----		East Tennessee and Ga.	111	1,000,000	1,500,000	2,500,000	In progr.				
Vermont Central	117	5,000,000	3,650,236	8,483,366	820,119	214,708	1	12	East Tennessee and Va.	16	626,426	928,593	1,033,781	In progr.				
Boston and Lowell	27	1,830,000	328,638	2,188,565	489,754	140,877	6	62	Nash. and Chattanooga	151	2,319,380	1,497,061	3,843,694	316,090	112,177	none		
Boston and Maine	53	4,076,974	150,000	4,179,655	864,426	339,060	6	77	Covington & Lexington	98	1,302,004	2,235,930	3,738,753	264,974	138,694	18		
Boston and N. Y. Central	74	2,420,300	1,518,071	3,468,183	89,017	8,740	-----		Lexington and Frankfort	29	240,055	168,099	687,071	98,263	43,635	6		
Boston and Providence	55	3,160,000	259,132	8,677,184	558,671	198,689	60		Lexington and Danville	-----	694,444	52,734	747,178	In progr.				
Boston and Worcester	68	4,500,000	655,428	4,865,491	1,008,004	404,461	6	53	Louisville and Frankfort	65	698,226	669,061	1,589,566	244,014	96,902	6		
Cape Cod	47	881,690	280,598	997,322	119,221	65,527	3	49	Atlantic & Gt. Western	254	866,939	77,294	618,231	In progr.				
Connecticut River	50	1,591,110	273,241	1,802,244	286,563	103,737	5	47	Bellefontaine and Ind.	118	1,851,660	2,025,925	2,852,652	268,293	140,826	none	30	
Eastern, Mass.	60	2,583,400	2,947,737	4,621,016	647,281	306,998	40		Clev. Col. and Cincinnati	141	4,547,020	122,857	4,618,722	1,290,295	732,056	9	102	
Fitchburg	67	8,540,000	153,700	3,765,998	681,163	226,071	65		Cleveland and Toledo	200	2,676,426	2,689,307	5,124,629	736,274	386,986	10	72	
North Eastern	50	800,242	225,558	988,521	In progr.				Clev. and Mahoning	103	-----	628,583	In progr.					
N. Bedford and Taunton	21	500,000	none	533,938	188,491	56,583	6	53	Clev. and Pittsburg	133	2,780,744	4,043,992	5,537,466	581,871	309,618	57		
Old Cofy and Fall River	57	8,015,100	292,650	3,832,049	663,499	205,738	6	82	Cin., Hamilt. & Dayton	60	1,321,213	9,987,757	508,271	278,012	155			
Vermont and Mass.	77	2,232,541	1,033,670	3,209,727	248,726	87,313	none	7	Columbus and Xenia	131	1,120,460	1,131,265	2,326,469	In progr.				
Western, Mass.	156	5,150,000	5,966,420	10,495,905	1,829,673	633,013	7	83	Dayton, Xen. & Belpre	65	1,484,560	149,000	1,481,733	366,361	187,518	10	82	
Worcester and Nashua	46	1,141,000	206,565	1,261,271	244,780	75,760	2	40	Dayton and Michigan	140	1,076,602	393,011	1,185,326	In progr.				
Worcester and Worcester	43	1,510,020	388,461	1,806,696	811,430	188,067	70		Dayton and Western	35	310,000	500,000	738,769	-----	17			
Hartford, D. Prov. and Fishkill	122	2,008,110	2,050,658	4,020,869	265,685	82,916	119,611	none	Eaton and Hamilton	42	454,870	904,489	1,165,135	171,929	65,000	20		
Housatonic	10	2,000,000	414,240	2,481,778	339,196	71,427	none		Little Miami	65	2,983,921	1,171,785	3,648,172	681,662	336,708	57		
Waupack	57	1,031,500	524,244	1,580,723	220,459	98,768	-----		Mad River and L. Erie	205	2,451,650	2,572,032	4,446,661	Recently opened.			15	
N. York and N. Haven	62	8,000,000	2,776,808	6,376,803	884,806	283,877	none	25	Central Ohio	138	1,520,927	8,485,075	4,283,443	Recently opened.				
N. Haven and N. London	50	738,268	575,165	1,450,818	88,007	30,318	-----		Ohio and Penn.	187	2,461,700	3,219,000	5,670,700	1,111,626	662,117	9		
N. London, W. & Palmer	66	509,200	1,073,673	1,594,383	124,044	66,480	-----		Pittsb'g, Mayw' & Cin.	50	371,354	31,000	390,933	In progr.				
Norwich and Worcester	32	435,000	1,625,098	1,840,695	117,716	9,004	-----		Sandy, Manf. & New'k	127	1,350,000	2,206,357	3,582,357	328,968	164,479	none		
Albany Northern	35	643,330	317,859	974,323	In progr.				Scioto & Hocking Valley	135	403,975	509,050	888,858	In progr.				
Block River and Utica	100	1,487,571	1,601,188	2,810,096	172,476	66,333	none		Springt. Mt. Vernon & P.	113	1,000,000	950,000	950,000	In progr.				
Buffalo, Ora. and N. Y.	92	798,483	2,557,849	3,401,868	288,302	31,896	none		Tol., Wabash & St. Louis	242	2,500,000	4,530,000	-----	In progr.				
Buffalo and N. Y. City	69	1,300,000	1,040,000	2,494,364	876,760	355,763	10		Madison and Indianapolis	87	1,647,700	1,836,816	1,205,000	2,126,146	112,880	none		
Buffalo and St. Line	47	434,111	292,393	1,275,778	174,089	69,506	-----		New Albany and Salem	288	2,535,121	5,281,48	6,643,189	645,827	371,000	none	10%	
Canandaigua and Elmira	69	1,315,000	2,79,854	3,495,832	-----				Peru and Indianapolis	73	611,400	1,261,717	907,911	350,176	134,375	50		
Canandaigua & Niagara F's	55	687,000	506,688	1,187,562	135,433	48,649	none		Indiana Central	66	1,216,723	1,442,858	2,178,461	356,012	198,142	7		
Hudson River	44	2,758,466	920,382	12,737,888	812,087	603,946	29		Ind. and Cincinnati	88	213,728	1,442,858	1,502,166	287,512	189,702	10		
Long Island	95	1,876,145	668,949	2,655,986	301,793	116,462	28		Terr. Haute and Ind.	73	974,800	604,356	1,502,166	287,512	189,702	10		
New York Central	54	214,586	14,462,742	25,523,778	1,638,913	5,638,581	1,622,120	8		Chicago and Rock Is'd.	182	3,141,500	2,837,156	5,214,126	In progr.	91		
New York and Erie	464	10,023,565	25,126,669	34,439,451	5,485,938	3,227,118	none	25	Chicago, Burl. and Quincy	58	1,639,100	1,684,736	2,884,622	722,580	379,821	20		
New York and Harlem	138	5,717,107	4,069,769	8,758,203	1,635,577	234,124	none		Central Military Tract.	88	1,202,500	2,133,050	2,920,241	471,399	219,588			
Northern, N. Y. and Oswego	36	399,000	216,681	729,683	126,540	59,982	3		Ohio, St. Paul & F'd Leue.	178	2,300,000	1,325,000	3,625,000	In progr.			108	
Watertown and Rome	29	467,200	294,189	749,883	In progr.				Galena and Chicago	259	5,441,500	3,818,039	7,742,614	2,315,786	1,192,042	22		
Belvidere Delaware	20	1,600,000	11,407,200	8,686,523	2,017,127	961,941	12	125	Illinois Central	627	2,271,000	19,416,392	20,374,446	1,582,118	527,962	109		
Camden and Amboy	60	369,320	1,522,181	1,729,842	122,417	50,880	none		Peoria and Oquawka	93	569,889	818,414	1,388,342	In progr.				
Camden and Atlantic	30	3,482,560	690,000	4,310,011	861,514	500,747	10	118	Ohio & Mus. (Wst. Div.)	147	1,780,230	2,929,403	4,870,686	Recently opened.				
New Jersey	62	2,000,000	2,268,178	8,683,149	893,728	171,603	-----		Terre Haute and Alton	173	2,281,420	1,256,000	5,837,424	In progr.				
New Jersey Central	63	1,157,805	375,000	1,636,550	229,341	96,267	6		Detroit and Milwaukee	185	838,000	1,128,964	1,926,969	In progr.				
Morris and Essex	44	1,637,867	342,564	1,983,783	Recently opened.				Mich. Central	282	6,032,444	5,996,013	10,668,155	2,215,238	879,656	10		
Allegany Valley	63	1,700,000	1,940,000	3,640,000	219,253	52,450	-----		Green Bay, Mil. & Ch.	156	764,076	442,726	1,193,766	2,315,786	1,192,042	22		
Catara, W. & Erie	63	1,099,500	121,211	1,191,883	146,381	66,994	-----		Illinois Central	627	2,271,000	19,416,392	20,374,446	1,582,118	527,962	109		
Cumberland Valley	66	2,051,622	3,884,702</															

Railroad Bonds.

NAMES
OF
COMPANIES.
(The following quotations are ex-
-interest.)

	Amount of Loan.	Description of Bonds.	Rate Int.	Interest pay- able.	Where payable.	Due.	Offered.	Asked.
Alabama and Tennessee River	\$88,000	1st mortgage, convertible	7	1st Jan. 1st July	N. Y.	1872	85	85
Buffalo and State Line	500,000	Do. convertible	7	April, October	1866	---	97 1/2	97 1/2
Bellefontaine and Indiana	600,000	Do. convertible	7	Jan'y, July	1866	---	65	65
Do. do.	200,000	Real estate, convertible	7	Jan'y, July	1868	---	---	---
Central Ohio	200,000	Income, guar. Cl. Col. & Cin.	7	Feb'y, August	1859	---	---	---
Do. do.	1,250,000	1st mort. conv. east. sec.	7	Divers	1861-64	82	83	83
Cincinnati, Hamilton, and Dayton	800,000	2d do. convertible	7	March, Sept.	1865	70	72	72
Do. do.	500,000	1st mortgage convertible	7	20 Jan. 20 July	1867	---	91	91
Do. do.	465,000	2d do. do.	7	May, Novemb.	1868	---	86	86
Cincinnati and Marietta	2,500,000	1st mortgage, conv. till 1862	7	Jan'y, July	1868	72 1/2	77 1/2	77 1/2
Cincinnati, Wilmington, and Zanesville	1,300,000	Do. convertible	7	May, Novemb.	1862	85	20	20
Cleveland, Painesville, and Ashtabula	567,000	Do. convertible	7	Feb'y, August	1861	91	95	95
Cleveland and Pittsburgh	800,000	Do. convertible	7	Feb'y, August	1860	93	118	118
Do. do.	1,200,000	Do. on Branches	7	March, Sept.	1873	75	73	73
Cleveland and Toledo	525,000	Do. convertible	7	Feb'y, August	1863	87	40	40
Chicago and Mississippi	800,000	Do. conv. till 1857	7	April, October	1862-72	80	200	200
Do. do.	1,200,000	Do. convertible	7	April, October	1862-72	80	20	20
Covington and Lexington	400,000	Do. do.	7	April, October	1867	75	24	24
Delaware, Lackawanna, and Western	1,000,000	2d mortgage, convertible	7	March, Sept.	1875	91	---	---
Fort Wayne and Chicago	1,250,000	1st mortgage, conv. till 1863	7	April, October	1873	80	---	---
Gaiena and Chicago	2,000,000	Do. convertible	7	Feb'y, August	1863	94	95	95
Do. do.	2,000,000	2d mortgage, do.	7	May, Novemb.	1875	87	88 1/2	88 1/2
Great Western (Illinois)	1,000,000	1st mortgage, do.	10	April, October	1868	87	90	90
Green Bay, Milwaukee, and Chicago	400,000	Do. convertible	8	10 April, 10 Oc.	1863	93	95	95
Jeffersonville	300,000	Do. 2d sec. conv.	7	April, October	1873	---	75	75
Indiana Central	600,000	Do. convertible	7	May, Novemb.	1866	90	90	90
Indianapolis and Bellefontaine	450,000	Do. do.	7	Jan'y, July	1860-61	70	81	81
Indianap. & Cin'ti (for Lawb. & U. M.)	500,000	Do. conv. till 1857	7	March, Sept.	1866	85	85	85
La Crosse and Milwaukee	950,000	1st mort. 1st sec. conv. till 1864	8	May, Novemb.	1874	82 1/2	85	85
Lake Erie, Wabash, and St. Louis	3,400,000	1st mortgage, conv. till 1859	7	Feb'y, August	1865	70	75	75
Little Miami	1,500,000	Do. convertible	6	2 May, 2 Nov.	1883	80	81	81
Michigan Central	1,000,000	No mortgage, convertible	9	April, October	Bost.	101 1/2	101 1/2	101 1/2
Do.	600,000	Do. do.	8	March, Sept.	1869	102 1/2	102 1/2	102 1/2
Milwaukee and Mississippi	600,000	1st mort. 1st sec. conv. till 1867	7	Jan'y, July	N. Y.	1862	95	96 1/2
Do. do.	650,000	Do. 2d do.	8	April, October	1863	95	95	95
New Albany and Salem	1,250,000	Do. 3d do.	8	June, Decemb.	1877	88	89	89
Do. do.	500,000	1st section	10	April, October	1858-62	---	---	---
Northern Cross	3,225,000	Do. oth. sec. con. till 1868	8	May, Novemb.	1864-75	---	---	---
Ohio and Indiana	1,200,000	1st mortgage, convertible	7	Jan'y, July	1873	95	95	95
Ohio and Pennsylvania	1,750,000	Do. do.	7	Feb'y, August	1867	90	90	90
Do. do.	2,000,000	Income, convertible	7	Jan'y, July	1865-66	95	96	96
Pennsylvania (Central)	5,000,000	1st mortgage, conv. till 1860	6	April, October	1872	80	80	80
Racine and Mississippi	680,000	Do. conv., sink'g f'd	8	Feb'y, August	Phila.	880	98	98
Scioto and Hocking Valley	300,000	Do. 1st sec. conv.	7	May, Novemb.	N. Y.	1876	80	85
Steubenville and Indiana	1,500,000	Do. convertible	7	Jan'y, July	1865	---	---	---
Terre Haute and Indianapolis	600,000	Do. do.	7	March, Sept.	1866	98	100	100
Terre Haute and Alton	1,000,000	Do. do.	7	Feb'y, August	1862-772	78	79	79
Do. do.	2,000,000	2d do.	8	Feb'y, August	1870	72	73	73

NAMES
OF
COMPANIES.
(The following quotations include
the accrued interest.)

	Amount of Loan.	Description of Bonds.	Rate Int.	Interest pay- able.	Where payable.	Due.	Offered.	Asked.
Baltimore and Ohio	2,500,000	Mortgage	6	April, October	Balt.	1885	86 1/2	86 1/2
Do. do.	1,128,500	Do.	6	Jan'y, July	Balt.	1875	87	88 1/2
Chicago and Rock Island	2,000,000	1st mortgage, conv. till 1868	7	10 Jan. 10 July	N. Y.	1870	92 1/2	92 1/2
Erie Railroad	3,000,000	1st mortgage	7	May, Novemb.	1867	104 1/2	106 1/2	106 1/2
Do.	4,000,000	2d mortgage, convertible	7	March, Sept.	1869	98	98 1/2	98 1/2
Do.	6,000,000	3d mortgage	7	March, Sept.	1883	99	100	100
Do.	4,000,000	Not conv. Sink. Fund, \$420,000	7	Feb'y, August	1875	93	94	94
Do.	435,100	Convertible, Incription	7	Feb'y, August	1871	87 1/2	88	88
Do.	3,500,000	Convertible	7	Jan'y, July	1862	91 1/2	92 1/2	92 1/2
Hudson River	4,000,000	1st mortgage, Incription	7	Feb'y, August	1869-70	99 1/2	100	100
Do.	2,000,000	2d do.	7	16 June, 16 Dec.	1860	87	89	89
Do.	3,000,000	3d convertible	7	May, Novemb.	1870	67	68	68
Illinois Central	17,000,000	Mortgage, convertible	7	April, October	1875	91 1/2	91 1/2	91 1/2
Do. (Free Land)	3,000,000	Mortgage, convertible	7	March, Sept.	1860	95	96	96
Michigan Southern	1,000,000	1st mortgage, convertible	7	May, Novemb.	1861-72	88	86	86
New York and Harlem	1,800,000	Do. do.	7	May, Novemb.	1865-66	81	82	82
New York and New Haven	750,000	No mortgage, do.	7	June, Decemb.	1859-60	92	92	92
New Haven and Hartford	1,000,000	1st mortgage, do.	6	Jan'y, July	1873	92	94	94
Northern Indiana	1,500,000	Do. do.	7	Feb'y, August	1861	89	93	93
Do. Goshen Branch	900,000	Do. do.	7	Feb'y, August	1868	84 1/2	86	86
New York Central	8,287,000	No mortgage, do.	6	May, Novemb.	1883	89	89 1/2	89 1/2
Panama, 1st issue	3,000,000	No m'g conv. from June 57-69	7	15 June, 15 Dec.	1864	102 1/2	103	103
Do. do.	900,000	Convertible till 1866	7	Jan'y, July	1866	100	100	100
Reading, issued 1843	1,478,000	Do. till 1868	7	Jan'y, July	1866	100	100	100
Do. do. 1844, '48, '49	1,573,000	Mortgage, convertible	6	Jan'y, July	1860	83	90	90
Do. do.	1,300,000	Do. convertible	6	Jan'y, July	1870	86	87	87
	3,469,000	Do. convertible	6	April, October				

CITY SECURITIES.

	Int'lst payable.	Off'd	Ask'd					
New York. 7 per et.	1857	Feb'y,	100	Milwaukee, 7 per et. coup.	X	Divers	85	87
Do. 5 do.	1858-60	May,	95	New Orleans, 6 per et. ep. R. R.	X	Do.	74	77
Do. 5 do.	1870-75	August, and	95 1/2	N. Orleans, 6 per et. ep. municip.	X	Jan'y, July	81	84
Do. 5 do.	1880	(November)	94 1/2	Philadelphia, 6 per et. coup.	X	Jan'y, July	91 1/2	92
Albany, 6 per et. coup.	1871-81	X Feb'y, August	97 1/2	Pittsburgh, 6 per et. coup.	X	Divers	74	75
Alleghany, 6 per et. coup.	1879-80	X Jan'y, July	76	Quincy, 8 per et. coup.	X	Jan'y, July	---	---
Baltimore, 6 per et. coup.	1879-80	Quarterly	97	Racine, 7 per et. coup.	X	10 Feb'y, Aug	98	100
Boston, 5 per et. coup.	1879	April October	97	Rochester, 6 per cent. coup.	X	Divers	95	100
Brooklyn, 6 per et. coup.	Long X	Jan'y, July	100	St. Louis, 6 per et. coup.	X	Do.	77 1/2	78 1/2
Clev'ld, 7 per et. coup.	W. W. 1879	X Do.	101	Do. do. Municipal.	X	Do.	79 1/2	81
Cincinnati, 6 per et. coup.	1873	X Divers	89	Sacramento, 10 p. et. coup.	1862-74	Do.	72	75
Chicago, 6 per et. coup.	1873-77	X Jan'y, July	89	Do. 10 p. et. coup.	1871	Do. do.	95	95
Do. 7 per et. coup.	1883	X Jan'y, July	100	Do. 10 p. et. coup.	1871	X Do.	52 1/2	55
Detroit, 7 per et. p. ep. W. W. 1873-78	X Feb'y, August	100	Do. 10 p. et. pay. N. Y.	X Jan'y, July	X Do.	---	---	---
ubnque, 8 per et. ep.	Long X	March, Sept.	101	Do. 6 per et. pay. N. Y. 1875	X Do. do.	82 1/2	84	84
Jersey City, 6 per et. ep. W. W. 1877	X Jan'y, July	94	Wheeler, 6 per et. coup.	X Divers	Do.	67 1/2	67 1/2	67 1/2
Louisville, 6 per et. ep.	1880-83	X Divers	78	Do. 6 per et. ep. Minn. 1874	X March, Sept.	---	81	81
Memphis, 6 per et. coup.	1882 X Jan'y, July	70	Zanesville, 7	X Do.	X Divers	87 1/2	87 1/2	87 1/2

Cincinnati Stock Sales.

By HEWSON & HOLMES.

For the week ending August 6th, 1866.

BONDS.
\$5,000 Little Miami, 6 per cent., 1st Mortg.
10,000 Cin., Wilm. and Zanesv. 7 per et. 2nd Mort. 45
2,000 Hillsboro' and Cin., 7 per cent. 1st Mort.
1,000 Indiana Central, 10 per cent. Income
2,000 Marietta & Cin., 7 per cent. Domestic
1,000 City of Wheeling 6 per cent.
2,000 City of Allegheny, 6 per cent.
1,500 Columbus & Xenia, Dividend, 7 per cent.
5 years.
6,000 Cov. and Lex., 10 per cent. Income
873 1/2 Little Miami, Dividend Scrip.

STOCKS.

Per et.
Little Miami, 6 per cent. Mort.
Covington & Lexington, 2nd Mort. 7 per et.
Ohio & Mississippi, 2nd Mort. 7 per et.
Indianap. & Cin., 2nd Mort. 7 per et.
Cin., Ham. and Dayton, 2nd Mort. 7 per et.
Hillsboro' and Cin., 7 per cent. 1st Mort.
Covington & Lexington, 10 per cent. Income
Indianapolis and Cincinnati Dividend
Columbus and Xenia Dividend, due Jan'y 1, 1861.
Do. do. due July 1, 1866.
Little Miami, Dividend Scrip, issued June, 1866.

BONDS.

STOCKS.

Bellevfontaine and Indiana, 25.—Cin., Ham. and Dayton, 27.

—Col. and Xenia, 32.—Cinc. and Chic., 3.—Covington &

Lexington, 18.—Dayton & Western, 17.—Eaton and Ham-

ilton, 20.—Indiana Central, 50.—Indianapolis and Cincinnati,

52.—Little Miami, 89.—Mad River & Lake Erie, 16.—Mari-

etta and Cincinnati, 16.—Ohio and Mississippi, 8 1/2.—Hillsboro' and Cincinnati, 16.—Peru and Indianapolis, 16.—Cincinnati, Wilm. and Zanesville, 14.

less known; stock contracts, 10 $\frac{1}{2}$ per cent. Exchanges.—Very little doing, with hardly any alteration in rates. London, 109 $\frac{1}{2}$ a $\frac{1}{2}$; Paris, 6.17 $\frac{1}{2}$ a 6.16. MARIE & KANZ.

Extract from De Coppet & Co.'s Money Circular for the European Steamer of the 13th inst.

[TRANSLATED.]

NEW YORK, Monday, Aug. 11, 1856.

There is no very striking alteration to notice in our stock market since our advices of 5th instant. Specie shipment, which, without being on an increased scale, continues steadily, does somewhat attract attention. Money, although easy to procure, is nevertheless in more active demand. This has brought about more freedom in transactions, especially in the more speculative stocks, but with heaviness in prices, which are generally lower than by last week's quotations, if we except three or four of the bonds, for which there was some foreign demand. On the whole, owing both to a desire to realize on speculative shares and to the execution of some European orders, there has been less dullness than the previous week. Besides these regular transactions, the negotiations which we notice below would indicate that, spite of the general indisposition to buy new issues of Western railroad securities, when some of them are presented which appear undoubtedly well based, they still find takers. State Stock.—There was a fair demand for Virginia 6s, Indiana 5s, and particularly for Missouri 6s, the two former at $\frac{3}{4}$ and $\frac{1}{2}$ decline, the latter at an advance of $\frac{1}{2}$ per cent.—City and County Bonds.—We have but a few retail sales to notice of St. Louis City and County 6s, Albany 6s, both at rather better prices; also of Pittsburg 6s, (municipal,) which sold higher than our quotations for railroad issues. Railroad Bonds.—There was but a very moderate amount done of Illinois Central Construction at a decline of 1c.; Freeland rose $\frac{1}{2}$ %, with very few sales.—There was a fair demand for New York Central 6s, which are 1 per cent. lower, and for Erie 7s of 1871 and 1883; the latter at 1 per cent. advance. At private sale there were transactions of some amount in Michigan 8s, 1869, and in Milwaukee and Mississippi, first mortgage, third section, without any marked fluctuations. We notice the negotiation of an issue of \$350,000 first mortgage bonds on the first section of the Burlington and Missouri railroad, (Iowa). These bonds bear 8 per cent. interest, are redeemable in 1876, and have the privilege of convertibility in the shares of the company till 1871. A sinking fund of 2 $\frac{1}{2}$ per cent. annually is provided for in the mortgage deed. We give below further details about these bonds, the road, and the grant recently made in its favor by the Government of the United States of public lands. Railroad Shares.—The decline is without exception, and in some cases rather heavy. There has been some movement in Erie, New York Central, Reading, and Cleveland and Toledo, and to a less degree in Michigan Southern, Cleveland and Pittsburg, and in Chicago and Rock Island. Panamas with few sales have declined 2 $\frac{1}{2}$ %. Money is in better demand, 7 for call loans. Paper—8 $\frac{1}{2}$ for first class.

DE COPPET & CO.

Berths in Railroad Cars.

The Illinois Central railroad is now introducing upon their road a new style of passenger cars, which are far ahead of anything in that line yet in the West. Some of these contain six state rooms, each having two seats with cushioned backs long enough for a person to lie upon. The back of the seats are hung with hinges at the upper edge, so that they may be turned up at pleasure, thus forming two single berths, one over the other, where persons may sleep with all the comfort imaginable. In one end of the car is a small wash-room, with marble wash-bowl, looking-glass, &c. On the opposite side of the car, from the state-room, is a row of seats with revolving backs similar to barber's chairs, so arranged that the occupant may sit straight or recline in an easy attitude at pleasure. The other cars have each two or three similar state-rooms.—Exchange.

American Railroad Journal.

Saturday, August 16, 1856.

earnings for the first year after its opening was \$172,000. The proposed connections would undoubtedly soon treble this sum, making the road a good property upon its entire cost.

The Locomotive.

No. 6.

By THEODORE KRAUSCH, Civil and Mechanical Engineer.

The results already mentioned in regard to the strength of the different kinds of rivetings, are of course dependant on the dimensions of the rivets used and thickness of iron. The diameter of the rivet, their distances from centre to centre, and the distance from the rivet to the edge of the sheet, are the most important points to be considered. Each must have a proportion that will enable all to resist equally. Riveting may be divided into three classes, namely:

1st. The sparse riveting, with strong rivets; which have the advantage of great strength, in comparison with the 2d close riveting, with small rivets; which are used where density is demanded. The 3d kind, with moderately strong rivets and medium riveting, will answer when both great strength and density are required. Hence the character of the boiler determines the kind of riveting to be used. No. 3 will correspond to the character of a locomotive boiler. For the details of its application, the following rules are recommended:

Thickness of the boiler iron

$\times 2$ gives the diameter of the rivet.

$\times 4$ " diameter of the rivet head.

$\times 4$ " distance from the centre of the rivet to the end of the sheet.

$\times 5$ " distance from centre to centre of the rivet.

At present, a machine for working the riveting is employed in large shops. This machine has been lately perfected. It operates by a lever, moved by steam; while one piston is riveting the head, a stamper calks the other end. The riveting is thus made perfect, and the noise of the old practice in a great degree avoided.

The principal points relating to the construction of boilers, have now been considered.

The examination of the parts which are required to give the boiler entire security, and also of those parts which influence the combustion, and therefore the steam production, will be next discussed.

We know the size of a boiler depends upon the greatest quantity of steam to be consumed per stroke in a certain time. Suppose the train reaches a descending grade, where possibly no steam is wanted, or at most a trifling quantity, the production though not entirely suspended is then diminished, and the blast consequently weakened. It amounts to $\frac{1}{2}$ of the greatest quantity which can be produced. If no arrangement were made to remove this quantity, the pressure in the boiler would gradually increase, in proportion to the degree of production; an explosion would be the result. The safety valve is the arrangement which allows this over-plus of steam to escape in such proportion, that the steam pressure does not increase beyond a given point. It also allows the escape of superfluous steam, when the generation is most active. Hence, then, the proportion of the safety valve depends on the proportions of the boiler or on the steam production. The proportional diameter of the valve, its load and freedom of play, are the important considerations to receive

The total cost of the road according to the last report to the Legislature, was \$2,272,777. Total

attention in its construction. To determine the diameter, it is necessary to understand the law of the velocity of steam escaping under a certain pressure into the atmosphere. Theory teaches, that steam escapes into a vacuum with the velocity that a body would attain by falling from a height equal to that of a column of steam, of uniform density, whose weight is equal to the pressure of steam.

Steam of one atmosphere, or 2.49 feet barometrical pressure, is nearly 1,700 times lighter than water, consequently $1,700 \times 13.6 = 23,120$ times lighter than quicksilver; a column of steam of such pressure, would be as high as $2.49 \times 23,120 = 57568.8$ feet.

A body falling from this height, in a vacuum, will receive a velocity per second =

$$\sqrt{2 \times \text{double space of fall at the first sec'd}} \times 57568.8 = \sqrt{2 \times 32.17} \times 57568.8 = 1,924 \text{ feet.}$$

The height, producing such velocity, could also be found, by multiplying the height of the column of quicksilver, which indicates the pressure of the steam, by the proportion of density of the quicksilver to the steam. The weight of one cubic foot of quicksilver = 849.2 pounds; the weight of one cubic foot of steam of one atmosphere = 0.0368 pound; consequently their proportion of pressure $\frac{849.2}{0.0368}$ and the height which produces

$$\text{the velocity} = 2.49 \times \frac{849.2}{0.0368} = 57568 \text{ feet; and the velocity per second =}$$

$(2 \times \text{double space of fall, at the first second} \times \text{by the height of the column of the quicksilver; indicating the pressure of the steam} \times \text{by the proportion of the pressure of the quicksilver to the steam.})$

Some changes are necessary in this formula, to adapt the result to steam, escaping into the atmosphere. Instead of the figure, representing the height of the column of quicksilver, indicating the steam pressure, the figure expressing the proportion between the barometrical difference of the steam pressure to the atmospherical height of the quicksilver, must be inserted. The pressure of the steam and its weight, we see, are necessary elements in the formula. To illustrate: let the pressure of the steam be 6 atmospheres; weight of one cubic foot 0.1894 pound and its barometrical pressure equal to 11.35 feet,

$$\left(2 \times 32.17 \times (11.35 - 2.49) \times \frac{849.2}{0.1894} \right)^{\frac{1}{2}} = 1598.84$$

feet per second. This figure multiplied by the area of the safety valve opening, gives the quantity of steam escaping from the safety valve per second. An important result arises from the above formula, namely: that, the higher the pressure of steam, the greater its velocity; consequently, the higher the steam pressure, the smaller the diameter of the opening. The French government orders the following formula, to regulate the diameter of the opening.

$$2.6 \left\{ \frac{\text{heating surface of boiler in sq. meters.}}{\text{the effective steam pressure}} \right\}^{\frac{1}{2}} = 0.412.$$

The method of finding the corresponding direct load upon the safety valve, is very simple. The formula is as follows: Interior valve surface \times (steam pressure—the outside atmosphere.) The product is the pressure against the valve, consequently, the load upon the valve (when its own

weight is included) must be equal to the pressure, acting against the valve. If the load acts indirectly upon a lever arm n , the valve upon a lever b , the static momentum of the valve being a and k the steam pressure against the valve, the corresponding load $L = \frac{kb-a}{n}$. These rules are still somewhat imperfect, especially if the face of the valve and of the seat is not very narrow; because the pores of the metal, near to those surfaces, are filled with steam, besides the air; consequently the surface of the pressure, will be somewhat larger than $3.1416 \times r^2$

The easy lifting of the valve depends upon its shape. An even narrow valve seat, will answer the purpose better than a conical seat. The best attested proportion, between the interior diameter of valve and the width of the valve face is recommended as $\frac{1}{30}$.

The over-loading of the valves, through the ignorance of the engine-driver or his incompetency, might cause great damage, and an explosion be expected. To remove this danger, it is necessary to apply two safety valves: one of them may be accessible to the engine-driver, the second be loaded something higher, and its leverarm placed inside the boiler, whereby the valve becomes inaccessible.

Gardiner's Volute Spring for Cars.

We have neglected till now to call attention to the compact and highly elastic steel spring, invented by Mr. P. G. GARDINER, of this city; not on account of any lack of importance in the subject, but from a wish to ascertain its actual durability in practice. The spring has now been upwards of a year in use under the iron horse cars of the Sixth-av. Railroad in this city, and for several months under passenger cars running in express and other trains on the Hudson River, and some twenty or more other railroads, without a single case of failure coming to our knowledge. A company has been formed, and arrangements completed for manufacturing these springs in the most perfect and rapid manner, and each spring is carefully tested by apparatus constructed for the purpose before being sent out. The manufacturer is on Twenty-sixth street in this city, and is provided with a powerful steam engine, large and well arranged heating furnaces, and with new and admirably contrived machinery for producing the springs with little labor, and keeping the delicate structure of the steel in the best possible condition. A strip of good cast steel about five feet long, $4\frac{1}{2}$ inches wide, and $\frac{1}{4}$ of an inch thick is wound up so as to form a low cone or sugar-loaf, but without allowing any of the coils to touch each other. It is then tempered in oil, and finally put to a severe trial in the testing machine. The load is allowed to bear constantly upon the point, or apex of the cone, and it is found in practice that this compact, strong, and extremely elastic spring, in addition to its other qualities, possesses the important one of springing to very nearly an equal amount with any given shock whatever may be the load supported. The whole may be enclosed in cast iron housings or not, as preferred, but in either case it promises all the compactness and ease of the rubber spring with more than the durability and economy of the ordinary elliptic one.

Ohio and Pennsylvania Railroad.

A report recently made its appearance, signed by Thomas W. Bartley, Dwight Jarvis, and William Bagaley, styling themselves a committee appointed by the stockholders of the Ohio and Pennsylvania railroad, to whom was referred the report of the committee appointed in 1855 to investigate the affairs of the company, the conditions of the accounts, etc., etc.

This report of the stockholder's committee, as it is termed, is chiefly characterized by a spirit of bitter hostility against the former management of the road, and particularly against Gen. Wm. Robinson, its President, during the entire period of its construction, and for several years thereafter.—The report charges that in the accounts of the company, \$951,902 remain to be accounted for, and attempts to throw upon Gen. Robinson the responsibility for the deficiency. This report is seized hold of by our city papers, ever eager to fill their columns with gossip, no matter on how slight a foundation, and produces for the moment quite a sensation as another case of railway mismanagement, or misconduct, on a stupendous scale.

The following is a correct abstract of their balance sheet, taken from the books of the company:

Road, equipments, offices and stations	DR.
Profit and loss	\$5,014,621.08
Bills receivable	448,106.19
Stock in other roads	266.80
Bonds of other companies, including hypothecated	162,500.00
Acc'ts with brokers and bankers	413,000.00
Gas company	42,928.93
Ass't Treasurer's acc'ts	758.75
Individual balances	16,428.60
J. J. Brooks, to pay taxes in Ohio	8,876.05
Unsettled stock	14,842.50
Wm. Larimer, Jr.	261.91
Cash	86,381.98
Total	\$6,227,458.55
	CR.
Capital stock	\$2,458,240.00
Income bonds	1,469,000.00
Mortgage bonds	1,750,000.00
Bills payable	518,150.31
Winslow, Lanier & Co.	20,825.60
John Larwell	260.07
Wm. Robinson, Jr.	6,952.32
Unpaid dividends	4,030.25
Total	\$6,227,458.55

To the debit side, the stockholder's committee added the net earnings, \$1,082,027, (since the road went into operation,) but which do not belong to this account, and are satisfactorily accounted for in another place.

The great discovery of this committee is simply a blunder of their own making. Every cent received by the company, or its officers, is satisfactorily accounted for by proper vouchers. There appears to be no doubt that these groundless charges were made in a spirit of hostility to Gen. Robinson, and with an earnest hope that they might prove true.

While upon this subject, and while exculpating General Robinson from the censure sought to be thrown upon him, it may be proper to add a word of our own. We happen to be pretty familiar with the history of the Ohio and Pennsylvania Railroad. It was commenced among the first of our newly built western roads; and consequently

with very inadequate notions and estimates as to its probable cost, and still more inadequate preparation of means. These soon began to be exhausted with the progress of the work, leaving no other alternative for a further supply than the credit of the Company. Now there is no doubt that the road owes its construction to a good credit, mainly secured to it through the instrumentality of General Robinson. In this way he created the means for construction as he proceeded with the work. In no other way could the road have been built; and we certainly know of no other man who could have carried it out, or who could have brought to his aid such powerful coadjutors. Under his administration, no enterprise more entirely commanded the confidence of capitalists, and no work, depending mainly upon its credit, proceeded more steadily towards its completion. Its great success measures the extent of the labors of its President, which, for years, were incessant, and aggravated by a constant anxiety which the necessity of borrowing to meet daily expenditures, imposed. Neither the people of Pittsburgh, nor of Central Ohio, nor of Pennsylvania built the Ohio and Penn's R. R., but strangers to all these, and whose confidence General Robinson secured.

We are not accustomed to be personal in this manner we have; but when we see a meritorious public servant who has built one of the great works of this country, maliciously slandered, we think it but just that his neighbors and the public should know what he is and what he has done for them.

Railroad Earnings for July.

The receipts of the Hudson River railroad for July, 1856, were \$120,991
Against July, 1855 119,494

Increase \$1,497

The receipts of the Galena and Chicago railroad for July, are:

	1855.	1856.
Freight	\$121,358	\$141,550
Passengers	62,606	80,259
Mails, &c.	1,955	3,889
Total	\$185,929	\$225,650

Increase \$39,723

The receipts of the Illinois Central in July were \$197,440, against \$180,000 in July last year.

The receipts of the Reading R. R. in July were:

	1855.	1856.
Received from coal	\$231,592	\$326,889
Received from merch'dise	26,535	26,806
Rec'd from travel, &c.	26,712	29,143
Total	\$384,839	\$382,889

	1855.	1856.
Transportation, dumpage, roadway, renewal fund, and all charges	187,900	70,133
Net profit for the month	\$216,845	\$212,206
Net profit for previous six months	665,900	977,086

Total net profit 7 mos. \$882,745 \$189,292

The receipts of the Little Miami railroad for the month of

July, 1856, were	..... \$93,352
July, 1855.	..... 68,896

Increase equal to 25 per cent. \$24,456

The earnings of the Milwaukee and Mississippi road in the month of July amount to \$60,183, against \$47,158 same month last year. The earnings of the La Crosse and Mississippi railroad for the same month were \$46,676. Last year the

line was not opened in July. The present earning is on 61 miles, at a cost of \$26,500 per mile.

MISSISSIPPI CENTRAL RAILROAD.

REPORT OF THE DIRECTORS TO THE STOCK-HOLDERS.

Gentlemen—In compliance with the provisions contained in the original act incorporating your company, and in behalf of the Board of Directors, I have the honor to submit, for your consideration, this Fourth Annual Report:

During the fiscal year now just closed, the work of construction on the line of your road has been steadily and perseveringly prosecuted by the Directory, with all the means they could command, without a resort to credits, or the ruinous policy of obtaining funds at high rates of interest, that would result injuriously to the value of your investment, and detrimental to the future credit of your company. If the amount of work accomplished, during the year, has not equalled your expectations, it has been only limited by the amount of funds that could be collected from subscribers to the capital stock of your company.

Although the amount of work under contract, at the time of your last annual meeting, was greater than desired in the then pecuniary condition of the country, the engagements of the company have been met with a punctuality satisfactory to all parties interested.

That portion of the road-track between Holly Springs and the junction with the Memphis and Charleston road—a distance of about 25 miles—was not completed and in readiness for the cars until the 22nd day of November last, a period of the year when a very large portion of the cotton crop of the country had been forwarded to market. The burthen cars necessary for the movement of freight offered for transportation, were not delivered until the 5th of December, although by the stipulations of the agreement for their construction, they were to have been delivered in the previous month of October. The delay in the delivery of the burthen cars, and the completion of the road-track to Holly Springs, materially lessened the amount of freight traffic that otherwise would have been transported over the division of the road here referred to.

By reference to the report of William M. Stockton Esq., Chief Engineer and Gen. Superintendent of your road, (herewith submitted for your consideration and marked "A,") it will be seen that the gross receipts of that division of your road, now in operation, for the six months ending on the first of the present month, have been as follows:

From Passengers	..... \$11,880
From Freights	..... 16,948
From Mail service	..... 1,200

Making the total of gross receipts	.... \$29,974
The expenses during the same period of time of operating this portion of your road, including repairs of track, cars and locomotives, the cost of oil, fuel, &c., has been	..... 11,233

Which, taken from the gross receipts, leaves a net income of \$18,741 11

The expenses incident to the transportation of iron rails, and other materials for the construction of track and road-bed, are included in the above item of expenditure without a corresponding credit to the receipts of the road. To exhibit correct results from the working of the road, the sum of \$4,150 should be debited to freight account for the transportation of materials; should this be done, the net income of the road, for six months, would be \$22,891 11, instead of \$18,741 11, as above stated.

The injurious effects of the severe frosts and heavy rains of the past winter upon the recently constructed earth-work, forming the road-bed, increased in no small degree the expenses of track repairs. It is believed that in consequence of the more firm condition of the road-bed, and more perfect drainage, that in future this extra expense

will be very much diminished, if not entirely obviated, even though we should again experience such an unusually inclement winter as the last.

The Engineer in Chief, in his report, already referred to, estimates the cost of the work yet to be executed, and materials to be supplied for the completion of the road-bed and superstructure between Holly Springs and Oxford, and from Canton north to a point on the line of road in Holmes county, near the Williams Ferry road, embracing a distance of 55.89 miles, at \$249,261.

The estimated cost of work to be executed, and materials to be furnished to complete the road-bed, and lay down the superstructure on the division of your road extending from Oxford to Grenada, a distance of 46 miles, is \$50,926 39, and the estimated cost of completing the road for operation from Grenada to the Williams Ferry road, in Holmes county, a distance of 60 1/3 miles, is \$53,525 08.

From these estimates, it appears that the cost of the unfinished work, and materials necessary to complete the road between Holly Springs and Canton, exclusive of materials now on hand, and exclusive of depot buildings and equipments, is \$1,438,712 47.

Additional equipments will be required during the present year to successfully operate the anticipated extension of your road-track to the estimated amount of \$80,000.

In the estimates here made, as to the cost of the unfinished portion of your road, the value of the iron rails, the principal item in future expenditures, is based on its present market price, and at an increased value of nearly ten dollars per ton over the estimate in my last Annual Report. The price paid for iron rails when purchased, may increase or diminish the amount of present estimates.

Contracts for the erection of all the Truss Bridges on the line of road have been made with an experienced bridge builder, who is now engaged with a large party of hands in the erection of the bridge over the Big Black, which will be in readiness for the rails by the time the track is laid from Canton to it.

Contracts favorable to the company have also been made for all the Trestling on thirty miles of the Southern division of the road, and on that part of the Northern division, extending from Holly Springs, south to Oxford. A large amount of the timber for the trestling here referred to, has been delivered on the line of road, a portion of it framed and in readiness for erection.

A contract has also been entered into with an experienced track-layer for laying down the superstructure on the Northern and Southern division of the road. The party with whom this contract has been made, is now in readiness with a large party of hands to commence, and energetically prosecute the work undertaken by him.

Anticipating the completion of the road-bed from Holly Springs south, to Oxford, and from Canton north, a distance of some 30 miles, within the term limited in the several contracts embracing that portion of the work, purchases of iron rails, chairs and spikes, were made last fall, to be delivered in New Orleans, during the winter and spring months, preparatory to the re-commencement of track-laying, nearly the entire amount of which has been delivered, and the residue will soon be; but the unusually inclement and cold weather of the past winter retarded the work of many contractors to such an extent, that they have not, even at this time, completed the work undertaken by them; and others, I regret to say have disregarded the obligations contained in their agreements for the performance of work on the road-bed, and the Directory, to avoid long continued delay in the extension of the track, have been compelled to increase the effective force on some of the contracts referred to, at the expense of the contractor.

These causes have delayed the re-commencement of track-laying, but the work on the unfinished portions of the road-bed is now progressing in a manner that gives assurance of its speedy

completion, and as the iron, chairs, spikes and ties, are now at command, a much longer delay in the prosecution of the work of laying down the superstructure need not be apprehended.

The Legislature of this State, at its recent session, passed a law authorizing a loan of \$400,000 of the proceeds of sales of the Chickasaw School Lands to the several railroad companies therein named, for the term of seven years, with interest at the rate of eight per cent. per annum, payable semi-annually in the city of Jackson. The Directory accepted of the provisions of the law here referred to, and the Treasurer of your company has obtained from the State, on account of this loan, the sum of \$95,850, and the additional sum of \$104,150 will be hereafter obtained from the same source whenever paid into the State Treasury to the credit of the Chickasaw School Fund.

The Legislature also authorized the issuance to your company of Internal Improvement Land Scrip to the amount of 50,000 acres, to be sold on account of the State, at a price limited at \$1 75 per acre, if sold for cash, and the State to be reimbursed for the scrip so issued and sold, by an issuance of certificates to the capital stock of your company, to an amount equal to the scrip sold, estimating its value at the price limited by law. The land scrip was received by your Treasurer from the State, and sales have been made to the extent of 39,000 acres, and no doubt is entertained but that the residue will be sold in a very short time.

I have the honor, also, to submit for your consideration, the reports of A. J. McConnice Esq., the Secretary of your company, marked "B," and the report of D. B. Molloy Esq., Treasurer, marked "C." The first named report exhibits all the fiscal transactions of the company from its organization to the present time, and the second embraces the receipts into and the disbursements from the Treasury during the fiscal year.

It appears from the report of the Secretary, that there has been paid into the Treasury on account of—

Capital Stock	\$1,211,857	86
Chickasaw School Fund Loan	95,850	00
Interest and Company Bonds	27,194	80
Receipts from road	29,974	13
Other sources.....	183,067	79

Total payments into the Treasury..\$1,547,944 58

There has been drawn from the Treasury, on account of Real and Personal Property, Engineering, Rights of Way, Graduation, Bridges and Trestling, Depot Grounds and Buildings, Iron Rails, Track-laying, &c.\$1,248,488 02 Salaries, Printing, Stationery, Attorneys' Fees, Court Costs and Expenses..... 29,759 84 Rolling Stock, Repair Shop and Fuel..... 62,634 27 Running Expenses and Repairs of Road and Cars..... 11,238 02 Loss, Damage, Discount and Interest, &c. 5,111 05

Making total expenditures..\$1,357,226 20

There remains in the hands of the Treasurer, cash and reliable cash assets, to the amount of \$190,718 88.

The item of bills payable, exhibited in the report of the Secretary, is almost entirely made up of notes issued in part payment for iron rails, chairs and spikes, and are not payable until March, April and May of next year.

There remains unpaid, on account of subscriptions to the capital of your company, the sum of \$533,797 08. Of this amount \$245,588 57 is payable by the counties of Marshall, Lafayette, Yalobusha and Holmes, in the years 1857, 8 and 9, with the exception of \$29,410 58, which is now due and payable.

The sum of \$288,258 51 is now due on individual subscriptions to capital stock. Of this amount the Secretary estimates \$60,000 as doubtful and worthless, leaving \$228,258 21 of reliable

individual subscriptions applicable to future construction.

The Treasurer, D. B. Molloy Esq., reports the receipts into the Treasury during the fiscal year, ending on the first of the present month, to be as follows, on account of—

Capital Stock	\$569,274	59
Interest and Exchange	8,384	79
Chickasaw School Fund Loan	95,850	00
Company Bonds.....	16,920	00
Freights, Passengers and Mail	29,974	13
Bills Payable	95,460	60
Bills Receivable.....	20,000	00
Reserved Fund	48,967	52
Total payments into the Treasury during the fiscal year.....	\$884,781	63

There was in the hands of the Treasurer, at the date of his last annual report, the sum of \$5,553 24.

This, added to the receipts, during the year, makes a total of \$890,384 87.

The disbursements by the Treasurer, during the same period, have been \$699,616.49, and on the following:

Graduation, Trestling, and Engineering	\$364,085.77
Depot and Water Stations.....	7,681.38
Superstructure	17,882.28
Iron and Equipments	279,271.19
Salaries, Printing, Attorneys' Fees and Expenses.....	13,682.43
Real and Personal Property	719.87
Discount, interest on Bonds, expenses of operating road, loss, damage, &c.	14,481.12

Total disbursements for the year.\$699,616.49
Leaving in the hands of the Treasurer of cash and other available assets to the amount of..... 190,718.88

At your last annual meeting, a committee of Stockholders was appointed to examine the books and accounts of your various officers and agents, and the condition of your road and its equipments, and to report the result of their investigation to this meeting.

The committee then appointed have neglected to discharge the duties assigned them. In consequence of this neglect, I, without authority from you, appointed three intelligent stockholders of Marshall county to perform the duty assigned by you to others. The report of the examination made by them is herewith submitted for your consideration.

The duties devolving on our examination committee, are of too important a character to be omitted, or carelessly performed. The security and protection of your property, the safe keeping and disbursement of your funds, the faithful discharge of the duties of each and all the officers and agents of the Company, involves much too large an amount to be committed to the care of any man or number of men, however honest, without frequent critical examinations into all of their acts.

I have, therefore, to recommend that a committee be appointed by you to discharge this duty the present year, and that authority be delegated to some one to fill any vacancy that may occur in said committee.

I have been instructed by the Board of Directors to recommend to your favorable consideration the propriety of reducing the number of members now composing the Directory. By the provisions of your charter you are authorized to reduce the number of members composing the Board to any number of not less than five. It is for you to determine if the success of the road will be best promoted, and your interest better protected, by a reduction of the number of Directors, or otherwise.

In the preceding part of this report, it has been stated that the Chief Engineer estimates the cost of completing the unfinished road-bed and laying down the superstructure, from Holly Springs to Canton, at \$1,438,712.47, exclusive of depot buildings, station houses and repair shops.

An expenditure to the estimated amount of \$80,000 will be required this year for additional equipments to supply the demands that will be made on the company for the movement of freight on the anticipated extension of road-track.

The assets of the company to meet this expenditure, and to pay its present liabilities are as follows:

Cash and cash assets now in the hands of the Treasurer of the Company.....	\$190,718.88
Amount of reliable individual subscriptions, after deducting such as are now considered worthless.....	228,258.51
Amount of county subscriptions payable in this and the three succeeding years, by direct taxation on the property in the counties.....	245,538.57
Amount of Bonds of the State of Tennessee to be received from the Mississippi Central and Tennessee Railroad Company.....	50,000.00
Estimated amount yet to be derived from the proceeds of the sale of Internal Improvement land by the State.....	128,000.00
Amount yet to be obtained by virtue of the law authorizing a loan to this company of a portion of the Chickasaw School Fund.....	104,150.00
Total assets.....	\$946,865.46

From this sum must be deducted the present liabilities, of the Company amounting to..... 183,067.79

There remains a balance of....\$763,597.67 Applicable to future construction, and exhibiting a deficiency in the estimated sum necessary to complete the road of \$670,114.80, exclusive of necessary expenditures for equipments, depot buildings and station houses.

Should the track of the road be extended south from Holly Springs to Oxford, a distance of about thirty miles, and from Canton north about the same distance, by the first of January next, as is now confidently anticipated, it is believed that the net income of the road the present fiscal year will not fall short of \$75,000. If there is no disappointment in this particular, then the working of the finished portions of the road will furnish an am't of funds equal to the estimated cost of the additional equipments that will be required for its operation.

From the preceding estimates and statements, it appears that the reliable assets of the company fall short of the estimated cost of the work you have undertaken to the amount of \$670,114.80.—How shall this deficiency be supplied, and what measures adopted to obtain speedy payments from delinquent subscribers to the capital stock of your company, are questions necessary to be solved, if you desire an early completion of the road.

It is undeniably certain, if the assets of the company can be realized during the present and succeeding year, and sales of the company bonds to the amount of \$800,000 or \$900,000 can be effected during the same period of time, the entire road can be fully completed and equipped by the first of January, 1858. Of this there at present exists no reasonable doubt.

With these sums at the command of the Directory, the work of track-laying, when re-commenced, need not be again suspended until the whole is accomplished. With a prospect so desirable in view, so beneficial to your interest, so advantageous to the whole community, duty impels me to appeal to each and all delinquent stockholders for prompt and immediate payment of all balances due by them, and to those stockholders who have complied with their engagements to the company with a promptness and punctuality worthy of all praise, I appeal for further aid. If you desire to render your stock profitable and the road beneficial, it must be completed. To speedily accomplish this object, I earnestly and respectfully urge upon all stockholders an investment in the bonds

of the company to an amount equal to the stock held by each.

There is another class of citizens to whom I also appeal for aid in making up the deficiency in the estimated cost of your road. I refer to those wealthy citizens of our State who, to the present time, have extended to you no willing aid in a work that must, when completed, result in great benefit to them as well as all other classes of the community. It is well known, that in the past progress of the work now under consideration, the company have been mainly dependent for the funds expended, not upon the wealthy residents on the line of road or in the State, but upon the middling classes, as regards individual wealth; while the former have looked idly, even coldly on your efforts, giving no encouragement, but, instead thereof, predicting loss to the stockholders and failure to the enterprise, the latter have pushed forward the work to its present favorable condition.

The sale of any considerable amount of the bonds of the company to citizens of our State, would have a tendency to impart additional value to those you may be compelled to dispose of abroad. If those who are supposed to be best acquainted with the importance, value and probable traffic of the road give evidence of the security of the bonds by investing in them, then may we reasonably hope that capitalists in other States may be willing to follow the example of our own citizens, and invest in them also.

It is not proposed to issue more than \$5,000 to each mile of road, and the payment of both principal and interest on this limited amount is secured by a mortgage on all the property and effects of the company, rendering the security good beyond all reasonable doubt.

The railroads with which yours connects at its northern and southern termini, are rapidly progressing towards completion. It is in contemplation to complete the New Orleans, Jackson and Great Northern road to the town of Canton by January, 1858. Efforts are being made, which, if successful, will insure the accomplishment of an object so advantageous to you, and beneficial to our whole State.

The iron rails on the Mississippi Central and Tennessee road, being the northern extension of yours, are now being laid down, and the track will be completed to Jackson, Tenn., before the close of the present year.

The Memphis and Charleston is fast approaching completion, and in a very few months, railroad communication will be opened from the northern terminus of your road to the city of Charleston and all the Atlantic cities. The benefits to be derived by you from the completion of these connecting links of communication, will be far greater than the most sanguine friends of your road can now anticipate, opening, as they will, direct railway communication with New Orleans, the North-western States and the Eastern cities.

All of which is respectfully submitted.

W. GOODMAN, Pres't.

Heavy Verdict against a Railroad Company.

Mr. Robert D. Ward has received a verdict of \$8,935 against the Buffalo and Erie Railroad Company, damages for the destruction of his hotel and furniture, which he claimed was set on fire by coals blown from a locomotive of the railroad company.

Northwestern Virginia Railroad.

We are informed that the track-laying on this road has already reached a point twelve miles from Grafton. The progress now making is about 4,000 feet per day, but with the aid of an additional engine, now on its way, the Superintendent expects to accomplish a mile per day from the eastern terminus. Another engine is on its way to Parkersburg, and from the time it reaches that point, about three-fourths of a mile per day can be laid at the Western end of the road. If these rates of progress can be maintained, and the skill

and energy of the Superintendent, Wm. D. Burton, Esq., gives assurance that they can, the road will be in full operation early in November, contracts having been made for all the iron required, and for the necessary rolling stock, deliverable by that time.—*Balt. Patriot.*

Railroads in Texas.

We learn that a bill authorizing a loan by the State to railroads has passed the House of Representatives of the State. The condition of the State loans are that fifty miles of road shall be graded, of which thirty-five miles must be complete before the company owing the road can avail itself of the State loan. The amount as fixed by the State is \$6,000 per mile.

General Freight Agent.

John J. Houston, Esq., has been appointed General Freight Agent of the Pittsburg, Fort Wayne and Chicago railroad. The Board of Directors and Management of the road have secured the service of a most efficient and thorough business man.—He will be able we predict, to conduct his department with credit to himself and satisfaction to the officers and stockholders of the road. We wish him, as he deserves, every success.—*Pittsburg Post.*

Coal-Burning Locomotive.

The Schenectady Locomotive Works have completed a coal-burning locomotive for a Western road. She has been run several days on the New York Central road, between Albany and Schenectady, with freight and passenger trains, and works admirably, making the time of express passenger trains with ease. The coal intended to be used in this engine is the Illinois and Ohio bituminous.—The coal used was Cumberland. The construction of the engine is similar to the ordinary wood-burning engine, with the exception of a large fire box, a shaking and dumping grate, and some minor differences. The consumption of coal is very moderate, being only 30 to 40 lbs. per mile when running with heavy freight or express trains.—*Exchange.*

Memphis City Bonds.

We learn that one hundred of the city bonds, for \$1,000 each, endorsed by the State, and issued for the benefit of the Memphis and Little Rock railroad, were sold yesterday at 93 cents on the dollar. Ex-Mayor Douglass, we understand, was the purchaser. The bonds have thirty years to run.—*Memphis Bulletin.*

Department of Practical Science, UNION COLLEGE, SCHENECTADY, N. Y.

THE CIVIL ENGINEERING COURSE opens Sept. 5, 1856. The studies during the coming Term are *Draughting* by plans, elevations and sections; *Leveling*, applied to Topography, &c.; *Stability of Structures*; *Stereotomy*; *Road and Railroads*, with field-work; *Analytical Geometry*; *Optics*; *Electricity and Magnetism*; *German*. The entire course occupies two years.

A course of *ANALYTICAL CHEMISTRY* commences at the same date. The plan of study depends on the objects, requirements and time of the student. A complete professional education in Chemistry will be given to such as may desire it.

For Catalogues of the College, containing full particulars of the courses, address 2433 G. GILBERT, Registrar.

FOR SALE.

2, 20 Ton Locomotives	4 ft. 8 1/2 in. gauge,
4, 25 do. do.	at a bargain.
6, 24 1/2 do. do.	
4, 26 do. do.	

Apply to DAVIS & KASSON, 24 BROADWAY.

FOR SALE

TWO LOCOMOTIVE ENGINES, suitable for gravel or other light trains. The above machines are in good order and sold for want of use. Apply at the office of the OAMDEN AND ATLANTIC R. R. CO., 56 Walnut st., PHILADELPHIA, Penn.

Brooklyn Water Works.

NOTICE TO MACHINISTS.

SEALED PROPOSALS will be received at the office of the undersigned until the 1st of October at noon, for the construction of two Pumping Engines, Cornish or equal to Cornish, for the Brooklyn Water Works, of capacity to raise Ten Millions (N. Y.) gallons daily each, 170 feet high, with three boilers each, to be built and erected complete on the stone foundations prepared for them, and to be of first class workmanship.

Drawings in detail accurately defining the style and character of engines and appurtenances to be submitted by the proposers, with description.

Specifications and further information may be had, at the office of the Chief Engineer, J. P. KIRKWOOD Esq., No. 4 Halsey's Buildings, Brooklyn, or of the undersigned.

The right is reserved to reject any of the proposals made.

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TO BRIDGE BUILDERS.

THE La Crosse and Milwaukee Railroad Company invites PROPOSALS with plans and specifications, until Wednesday noon, October 16th next, for building a bridge over the Wisconsin river on the line of their road. This road extends in a north-westerly direction, across the State, from Milwaukee on Lake Michigan to La Crosse on the Mississippi river crossing the Wisconsin river at Kilbourn City in Columbia county. The river at this point runs in a rocky bed, the banks of which are vertical rock bluffs to the height of 80 feet above the water, at which point they are at the grade line of the road, and about 300 feet apart. The water is about 20 feet deep, having in the middle of the stream a few feet of sand overlaying the rock bottom. It is proposed to erect two piers about 50 feet from either bank, at which points the water is about 5 feet deep at low water, with a clean rock bottom, giving a span in the middle of 200 feet, and two short spans at the ends, resting upon the natural rocks as abutments. It is desirable so to construct the bridge as to give a wagon way below the railroad track, passing the latter over the higher section of the bridge. The company reserve the right to award the contract to any parties on any plan furnished; but in case of their giving the contract to any builder on a plan furnished by any other person, they will pay to the person furnishing such plan, the sum of FIVE HUNDRED DOLLARS in full consideration of the plan and specifications so adopted.

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A GOOD second hand Archambault Steam Engine, about 10 horse power, with tubular boiler complete.

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SALE OF THE Syracuse & Binghamton R.R.

SUPREME COURT.—David Hoadley & Horace White, Trustees for the First Mortgage Bondholders of the Syracuse and Binghamton Railroad Company, against the Syracuse and Binghamton Railroad Company and others.

In pursuance of a judgment of foreclosure and sale, entered in this action on the first day of August, 1856, there will be sold by me, or under my direction, at the Syracuse House, in the city of Syracuse, on the 20th day of September, 1856, at 10 o'clock in the forenoon, "All and singular the corporate property and franchises of the said Syracuse and Binghamton Railroad Company, consisting of all the lands, tracks, lines, rails, bridges, ways, buildings, piers and wharfs, erections, fences, walls, fixtures, privileges, franchises, rights and real estate whatsoever, and all the tolls, income, issues and profits to be had from the same, and all the railway depots or stations, with the buildings thereon, together with all the locomotives, tenders, cars, carriages, tools and machinery owned by said Syracuse and Binghamton Railroad Company, or any way belonging or appertaining to said road and used thereon, between the city of Syracuse and village of Binghamton, including 18 locomotive engines, tenders and fixtures, 10 locomotive lamps, 10 first class passenger cars, 3 second class passenger cars, 2 mail baggage and express cars, 3 baggage cars, with stoves and lamps in each, 50 box cars, 34 platform cars, 40 gravel cars, 8 hand cars, 1 large snow plow; also one stationary engine and boiler, 2 lathes, 1 wheel press, 1 upright drill, 40 feet line shafting, 8 bands and pulleys for same, 3 forges and bellows, 3 anvils and all the tools in the shop at Syracuse, and along the line of said road, and materials on hand for repairs and use of said road; also, 80 tons of iron rails, 20 tons of railroad chairs, 10 tons of nail spikes, 16 frogs, 8,000 cords of wood at various points along the line of said road, 12 hand trucks, 8 platform scales, 19 stoves, and all the furniture, books and blanks at the several stations and buildings along the line of said road; 120 lamps of various kinds, in use on trains, at stations, shops, and switchers along the line of said road; also, the office furniture, consisting of two large desks, two tables and cases of pigeon holes, 3 iron safes, one draughting table, one case of drawers, 4 stoves, one ticket case and tickets in same, one regulator, sundry blanks, blank books and stationery for use of said Company."

A more complete inventory of property and description of premises to be sold, together with the maps and profiles, will be exhibited on the day of sale, and also the terms of sale will then and there be made known. Dated August 4th, 1856.

B. DAVID NOXON, Referee.

DAVIS & LEACH, Attorneys. 6133

Railroad Iron.

WE are prepared to contract to deliver Rails at fixed sterling prices, free on board, in English or Welsh ports, and also at prices including freight to New York or Boston.

NAYLOR & CO.,

99 and 101 JOHN ST., N. Y.

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SEALED PROPOSALS will be received by the undersigned until the 15th day of August at 12 M. for the construction of the RIDGE HILL RESERVOIR, situated near the Jamaica road, about five miles from Brooklyn.

The work consists of earth-work, slope wall and puddling. Specifications and plans of the work will be shown on the ground and at the Engineers office, Halsey's Building, Brooklyn, from the 6th August.

The right is reserved to reject any or all of the proposals made.

H. S. WELLES & CO.,
No. 4 Wall street, NEW YORK.

The above is postponed as follows:
Plans, Specifications, etc., will be ready on the 12th, and propositions received until the 20th, at 12 M.

31st H. S. WELLES & CO.

Railroad Iron.

1,000 TONS "New York and Erie" pattern, weighing about 57 lbs. per linear yard, on the way from English shipping port to New York. For sale by THEODORE DEHON,

10 Wall st., near Broadway.
4:31 NEW YORK.

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9 South William st.
NEW YORK, July 26th, 1856. 1m30

Railroad Iron.

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Jersey City, N. J.
2m.

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Proposals will specify, the amount for which the work will be done; the mode and manner in which payments are to be made, whether in Lands, or Money, or portions of each.

Maps, Profiles, and Estimates can be seen at this office, and any information obtained by addressing the undersigned a "Orange Mill Post Office, St. Johns River, Florida."

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F. L. DANCY,
State Engineer, State of Florida.
1856

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The CIVIL ENGINEER & ARCHITECT'S JOURNAL.

(ESTABLISHED 1837.)

THIS JOURNAL contains Notices of all the principal Public Works, Buildings, new Machinery, Patents, and Improvements, Illustrated with numerous Plates and Engravings, from the best examples in England and America—Original Papers and Notes—Reports of the Meetings of the various Scientific Societies—Translations from Foreign Works—Reviews of New Books—List of New Patents, and Report of all important Patent cases in the Courts of Law. Forming a complete Encyclopedia of Modern Engineering, Architecture and Science. It reckons among its contributors and supporters the most eminent scientific men; and as a work of reference and current information, has been long received as an authority in the United Kingdom, America, and the continent of Europe.

Members of the Profession, Patentees, and other scientific men, who are desirous of keeping up their acquaintance with the practice and progress of Science and Art, will find that this periodical is particularly directed to give them the required information, whether as a matter of the latest intelligence, or for the purposes of after-reference.

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August, 9, 1856. 3m

Illinois Central R. R. Co.
FARM LANDS FOR SALE.

THE ILLINOIS CENTRAL RAILROAD COMPANY IS NOW PREPARED TO SELL OVER TWO MILLION OF ACRES OF FARMING LANDS, in tracts of 40 acres and upwards, on long credits and at low rates of interest.

These lands were granted by the Government to aid in the construction of this railroad, and include some of the richest and most fertile prairies in the State, interspersed here and there with magnificent groves of oak and other timber. The road extends from Chicago, on the north-east, to Cairo at the South, and from thence to Galena and Dunleith, in the north-west extreme of the State, and as all the lands lie within fifteen miles on each side of this road, ready and cheap means are afforded by it for transporting the products of the lands to any of those points and from thence to eastern and southern markets. Moreover, the rapid growth of flourishing towns and villages along the line, and the great increase in population by immigration, &c., afford a substantial and growing home demand for farm produce.

The soil is a dark, rich mould, from one to five feet in depth, is gently rolling and peculiarly fitted for grazing cattle and sheep, or the cultivation of wheat, Indian corn, &c.

Economy in cultivating and great productiveness are the well-known characteristics of Illinois lands. Trees are not required to be cut down, stumps grubbed, or stone picked off, as is generally the case in cultivating new lands in the older States. The first crop of Indian corn, planted on the newly broken sod, usually repays the cost of plowing and fencing.

Wheat sown on the newly turned sod is sure to yield very large profits. A man with a plow and two yoke of oxen will break one and a-half to two acres per day. Contracts can be made for breaking, ready for corn or wheat, at from \$2 to \$2.50 per acre. By judicious management, the land may be plowed and fenced the first, and under a high state of cultivation the second year.

Corn, grain, cattle, &c., will be forwarded at reasonable rates to Chicago, for the Eastern market, and to Cairo for the Southern. The larger yield on the cheap lands of Illinois over the high-priced lands in the Eastern and Middle States, is known to be much more than sufficient to pay the difference of transportation to the Eastern market.

Bituminous coal is mined at several points along the road, and is a cheap and desirable fuel. It can be delivered at several points along the road at \$1.50 to \$4 per ton; wood can be had at the same rates per cord.

Those who think of settling in Iowa or Minnesota should bear in mind that lands there, of any value, along the water courses and for many miles inland, have been disposed of; that for those located in the interior, there are no conveniences for transporting the produce to market, railroads not having been introduced there. That to send the produce of these lands one or two hundred miles by wagon to market, would cost much more than the expense of cultivating them; and hence, Government lands thus situated, at \$1.25 per acre, are not so good investments as the land of this Company at the prices fixed.

The same remarks hold good in relation to the lands in Kansas and Nebraska, for although vacant lands may be found nearer the water courses, the distance to market is far greater, and every hundred miles the produce of these lands is carried either in wagons, or interrupted water routes. This increases the expense of transportation, which must be borne by the settlers, in the reduced price of their products; and to that extent precisely are the incomes from their farms, and of course on their investments, annually and every year reduced.

The great fertility of the lands now offered for sale by this Company, and their consequent yield over those of the Eastern and Middle States, is much more than sufficient to pay the difference in the cost of transportation, especially in view of the

facilities furnished by this road, and others with which it connects, the operations of which are not interrupted by the low water of Summer, or the frost of Winter.

PRICE AND TERMS OF PAYMENT.

The price will vary from \$5 to \$25, according to location, quality, &c. Contracts for deeds may be made during the year 1856, stipulating the purchase money to be paid in five annual instalments. The first to become due in two years from the date of contract, and the others annually thereafter. The last payment will become due at the end of the sixth year from the date of the contract.

INTEREST WILL BE CHARGED AT ONLY THREE PER CENT. PER ANNUM.

As a security to the performance of the contract, the first two years' interest must be paid in advance, and it must be understood that at least one-tenth of the lands purchased shall yearly be brought under cultivation. Longer credits, at 6 per cent. per annum, may be negotiated by special application. Twenty per cent. from the credit price will be deducted for cash. The Company's construction bonds will be received as cash.

READY FRAMED FARM BUILDINGS, WHICH CAN BE SET UP IN A FEW DAYS, CAN BE OBTAINED FROM RESPONSIBLE PERSONS.

They will be 12 feet by 20 feet, divided into one living and three bedrooms, and will cost, complete, set up on ground chosen anywhere along the road, \$150 in cash, exclusive of transportation. Larger buildings may be contracted for at proportionate rates. The Company will forward all the materials for such buildings over their road promptly.

Special arrangements with dealers can be made to supply those purchasing the Company's lands with fencing materials, agricultural tools, and an outfit of provisions in any quantity, at the lowest wholesale prices.

It is believed that the price, long credit, and low rate of interest, charged for these lands, will enable a man with a few hundred dollars in cash, and ordinary industry, to make himself independent before all the purchase money becomes due. In the mean-time, the rapid settlement of the country will, probably, have increased their value four or five-fold. When required, an experienced person will accompany applicants, to give information and aid in selecting lands.

Circulars, containing numerous instances of successful farming, signed by respectable and well-known farmers living in the neighborhood of the railroad lands, throughout the State—also, the cost of fencing, price of cattle, expense of harvesting, threshing, &c., by contract—or any other information—will be cheerfully given, on application, either personally or by letter, in English, French, or German, addressed to

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